ORDER FOR SUPPLIES OR SERVICES

PAGE 1 OF 13

1. CONTRACT/PURCH. ORDER/ AGREEMENT NO.	2. DELIVERY ORDER/ CALL NO.	3. DATE OF ORDER/CALL	4. REQ./ PURCH. REQUEST NO.	5. PRIORITY
DACA67-99-D-1018	0013	2001Sep30	W68MD9-1248-2492	

6. ISSUED BY CODE DACA67

USA ENGINEER DISTRICT, SEATTLE
ATTN: CENWS-CT
P.O. BOX C-3755
SEATTLE WA 98124-3755

7. ADMINISTERED BY CODE

SEE ITEM 6

8. DELIVERY FOB
[X] DEST
[ ] OTHER
(See Schedule if other)

9. CONTRACTOR CODE 0MGY6 FACILITY

CENTENNIAL CONTRACTORS ENTERPRISES INC
JACK WASCHITZ
8500 LEESBURG PIKE STE 500
VIENNA VA 22182-2409

10. DELIVER TO FOB POINT BY (Date)
2003Jan31

11. MARK IF BUSINESS IS
[ ] SMALL
[ ] SMALL DISADVANTAGED
[ ] WOMEN-OWNED

12. DISCOUNT TERMS

13. MAIL INVOICES TO THE ADDRESS IN BLOCK
See Item 15

14. SHIP TO CODE G370F00

SUPPLY & FACILITIES MGMT BR.
4735 E. MARGINAL WAY S.
SEATTLE WA 98134-2385

15. PAYMENT WILL BE MADE BY CODE W66KQZ

US ARMY CORPS OF ENGRS FINANCE CENTER
CEFC-AO-P 901-874-8556
5720 INTEGRITY DRIVE
MILLINGTON TN 38054-5005

MARK ALL PACKAGES AND PAPERS WITH IDENTIFICATION NUMBERS IN BLOCKS 1 AND 2.

16. TYPE OF ORDER
[X] DELIVERY/ CALL — This delivery order/call is issued on another Govt. agency or in accordance with and subject to terms and conditions of above numbered contract.
[ ] PURCHASE — Reference your quote dated — Furnish the following on terms specified herein.

ACCEPTANCE. THE CONTRACTOR HEREBY ACCEPTS THE OFFER REPRESENTED BY THE NUMBERED PURCHASE ORDER AS IT MAY PREVIOUSLY HAVE BEEN OR IS NOW MODIFIED, SUBJECT TO ALL OF THE TERMS AND CONDITIONS SET FORTH, AND AGREES TO PERFORM THE SAME.

NAME OF CONTRACTOR | SIGNATURE | TYPED NAME AND TITLE | DATE SIGNED (YYYYMMMDD)

[ ] If this box is marked, supplier must sign Acceptance and return the following number of copies:

17. ACCOUNTING AND APPROPRIATION DATA/ LOCAL USE

See Schedule

18. ITEM NO.	19. SCHEDULE OF SUPPLIES/ SERVICES	20. QUANTITY ORDERED/ ACCEPTED*	21. UNIT	22. UNIT PRICE	23. AMOUNT
	SEE SCHEDULE				

** If quantity accepted by the Government is same as quatity ordered, indicate by X. If different, enter actual quantity accepted below quantity ordered and encircle*

24. UNITED STATES OF AMERICA
BY: SUSAN K SHERRELL CONTRACTING / ORDERING OFFICER

25. TOTAL $1,231,000.00
29. DIFFERENCES

26. QUANTITY IN COLUMN 20 HAS BEEN
[ ] INSPECTED [ ] RECEIVED [ ] ACCEPTED, AND CONFORMS TO THE CONTRACT EXCEPT AS NOTED

DATE | SIGNATURE OF AUTHORIZED GOVT. REP.

27. SHIP NO.
[ ] PARTIAL
[ ] FINAL

28. DO VOUCHER NO.

30. INITIALS

32. PAID BY

33. AMOUNT VERIFIED CORRECT FOR

31. PAYMENT
[ ] COMPLETE
[ ] PARTIAL
[ ] FINAL

34. CHECK NUMBER

36. I certify this account is correct and proper for payment.

DATE | SIGNATURE AND TITLE OF CERTIFYING OFFICER

35. BILL OF LADING NO.

37. RECEIVED AT	38. RECEIVED BY	39. DATE RECEIVED (YYYYMMMDD)	40. TOTAL CONTAINERS	41. S/R ACCOUNT NO.	42. S/R VOUCHER NO.

DD Form 1155, JAN 1998 (EG) PREVIOUS EDITION MAY BE USED.

SECTION 00010 Solicitation Contract Form

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0001		270,000.00	Lump Sum	$1.00	$270,000.00

Constructing Selah BSA Roads 1-4
FFP - In accordance with technical specifications.
PURCHASE REQUEST NUMBER W68MD9-1248-2492

	MAX NET AMT	$270,000.00
ACRN Funded Amount		$270,000.00

TAC:
Case

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0002		222,000.00	Lump Sum	$1.00	$222,000.00

Road to Construct Road 45C
FFP - In accordance with technical specifications.
PURCHASE REQUEST NUMBER W68MD9-1248-2492

	MAX NET AMT	$222,000.00
ACRN _ Funded Amount		$222,000.00

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0003		30,000.00	Lump Sum	$1.00	$30,000.00

Drainage Features 1-9
FFP - In accordance with technical specifications.
PURCHASE REQUEST NUMBER W68MD9-1248-2492

	MAX NET AMT	$30,000.00

ACRN Funded Amount $30,000.00
TAC:
Case

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0004		5,500.00	Lump Sum	$1.00	$5,500.00

Phone Line Relocation at Selah BSA
FFP - In accordance with technical specifications.
PURCHASE REQUEST NUMBER W68MD9-1248-2492

	MAX NET AMT	$5,500.00

ACRN Funded Amount $5,500.00
TAC:
Case

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0005				$	$
	Crush & Stockpile Wearing Course at 45C FFP PURCHASE REQUEST NUMBER W68MD9-1248-2492				
				MAX NET AMT	$

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0005AA		135,000.00	Cubic Yard	$1.00	$135,000.00
	First 18000 CY FFP - In accordance with technical specifications. PURCHASE REQUEST NUMBER W68MD9-1248-2492				
				MAX NET AMT	$135,000.00
	ACRN _ Funded Amount				$135,000.00

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0005AB		20,000.00	Cubic Yard	$1.00	$20,000.00

All Over 18000 CY
FFP - In accordance with technical specifications.
PURCHASE REQUEST NUMBER W68MD9-1248-2492

MAX NET AMT		$20,000.00
ACRN Funded Amount		$20,000.00

TAC:
Case

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0006				$	$

Rock Weir Construct 10 CY Dump Truck
FFP
PURCHASE REQUEST NUMBER W68MD9-1248-2492

MAX NET AMT		$

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0006AA		3,000.00	Hours	$1.00	$3,000.00

First 40 Hours
FFP - In accordance with technical specifications.
PURCHASE REQUEST NUMBER W68MD9-1248-2492

MAX NET AMT		$3,000.00
ACRN Funded Amount		$3,000.00

TAC:
Case

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0006AB		1,500.00	Lump Sum	$1.00	$1,500.00

All Over 40 Hours
FFP - In accordance with technical specifications.

PURCHASE REQUEST NUMBER W68MD9-1248-2492

MAX NET AMT		$1,500.00
ACRN Funded Amount		$1,500.00

TAC:
Case

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0007			Lump Sum	$	$
	Rock Weir Construct Track Mounted FFP - Hydraulic Excavator PURCHASE REQUEST NUMBER W68MD9-1248-2492				
				MAX NET AMT	$

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0007AA		8,000.00	Hours	$1.00	$8,000.00
	First 80 hours FFP - In accordance with technical specifications. PURCHASE REQUEST NUMBER W68MD9-1248-2492				
				MAX NET AMT	$8,000.00
	ACRN Funded Amount TAC: Case				$8,000.00

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0007AB		2,000.00	Hours	$1.00	$2,000.00

All Over 80 hours
FFP - In accordance with technical specifications.
PURCHASE REQUEST NUMBER W68MD9-1248-2492

	MAX NET AMT	$2,000.00
ACRN Funded Amount		$2,000.00

TAC:
Case

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0013		250,000.00	Lump Sum	$1.00	$250,000.00

Construct 45C Foster Creek Rd
FFP - In accordance with technical specifications.

PURCHASE REQUEST NUMBER W68MD9-1248-2492

	MAX NET AMT	$250,000.00
ACRN _ Funded Amount		$250,000.00

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0014		55,000.00	Lump Sum	$1.00	$55,000.00

Construct 45C-Cm03 to John Wayne Trail Intersect
FFP - In accordance with technical specifications.
PURCHASE REQUEST NUMBER W68MD9-1248-2492

	MAX NET AMT	$55,000.00
ACRN _ Funded Amount		$55,000.00

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0015		10,000.00	Lump Sum	$1.00	$10,000.00

Install 45C 13, 14 & 15
FFP - In accordance with technical specifications.

PURCHASE REQUEST NUMBER W68MD9-1248-2492

	MAX NET AMT	$10,000.00
ACRN _ Funded Amount		$10,000.00

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0016		13,000.00	Lump Sum	$1.00	$13,000.00

Install 45C 16 & 17
FFP - In accordance with technical specifications.
PURCHASE REQUEST NUMBER W68MD9-1248-2492

MAX NET AMT		$13,000.00
ACRN _ Funded Amount		$13,000.00

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0017		17,000.00	Lump Sum	$1.00	$17,000.00

Install 45C 18 & 19
FFP - In accordance with technical specifications.
PURCHASE REQUEST NUMBER W68MD9-1248-2492

MAX NET AMT		$17,000.00
ACRN _ Funded Amount		$17,000.00

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0018		4,000.00	Lump Sum	$1.00	$4,000.00

Install 45C 20 & 21
FFP - In accordance with technical specifications.

PURCHASE REQUEST NUMBER W68MD9-1248-2492

MAX NET AMT	$4,000.00
ACRN _ Funded Amount	$4,000.00

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0019		185,000.00	Lump Sum	$1.00	$185,000.00

Construct Road 45C from John Wayne Trail
FFP - to Burrow Pit in accordance with technical specifications.
PURCHASE REQUEST NUMBER W68MD9-1248-2492

MAX NET AMT	$185,000.00
ACRN _ Funded Amount	$185,000.00

DELIVERY INFORMATION

CLINS	DELIVERY DATE	UNIT OF ISSUE	QUANTITY	FOB	SHIP TO ADDRESS
0001	31-JAN-03	Lump Sum	270,000.00	Dest.	G370F00 SUPPLY & FACILITIES MGMT BR. 4735 E. MARGINAL WAY S. SEATTLE WA 98134-2385
0002	31-JAN-03	Lump Sum	222,000.00	Dest.	Same as CLIN 0001

0003	31-JAN-03	Lump Sum	30,000.00	Dest.	Same as CLIN 0001
0004	31-JAN-03	Lump Sum	5,500.00	Dest.	Same as CLIN 0001
0005	31-JAN-03				Same as CLIN 0001
0005AA	31-JAN-03	Cubic Yard	135,000.00	Dest.	Same as CLIN 0001
0005AB	31-JAN-03	Cubic Yard	20,000.00	Dest.	Same as CLIN 0001
0006	31-JAN-03				Same as CLIN 0001
0006AA	31-JAN-03	Hours	3,000.00	Dest.	Same as CLIN 0001
0006AB	31-JAN-03	Lump Sum	1,500.00	Dest.	Same as CLIN 0001
0007	31-JAN-03	Lump Sum			Same as CLIN 0001
0007AA	31-JAN-03	Hours	8,000.00	Dest.	Same as CLIN 0001
0007AB	31-JAN-03	Hours	2,000.00	Dest.	Same as CLIN 0001
0013	31-JAN-03	Lump Sum	250,000.00	Dest.	Same as CLIN 0001
0014	31-JAN-03	Lump Sum	55,000.00	Dest.	Same as CLIN 0001
0015	31-JAN-03	Lump Sum	10,000.00	Dest.	Same as CLIN 0001
0016	31-JAN-03	Lump Sum	13,000.00	Dest.	Same as CLIN 0001
0017	31-JAN-03	Lump Sum	17,000.00	Dest.	Same as CLIN 0001
0018	31-JAN-03	Lump Sum	4,000.00	Dest.	Same as CLIN 0001
0019	31-JAN-03	Lump Sum	185,000.00	Dest.	Same as CLIN 0001

SECTION 00800 Special Contract Requirements

ACCOUNTING AND APPROPRIATION DATA

:	21120200000 088082	3200273LGC43885323000	VENN 35026	000000000000
AMOUNT:	$290,000.00			
FUNDING	JOB ORDER NO			QUANTITY
ACRN:				
AMOUNT:				
:	21120200000 088082	32005C424643885341000	VENN 35026	000000000000
AMOUNT:	$50,000.00			
FUNDING	JOB ORDER NO			QUANTITY
ACRN:				
AMOUNT:				
_:	21020500000 088082	32000033LD10448000000	VENC 35026	000000000000
AMOUNT:	$756,000.00			
_:	21120500000 088082	3200FH653870000000000	E316 35026	000000000000
AMOUNT:	$135,000.00			

TABLE OF CONTENTS

TECHNICAL SPECIFICATIONS

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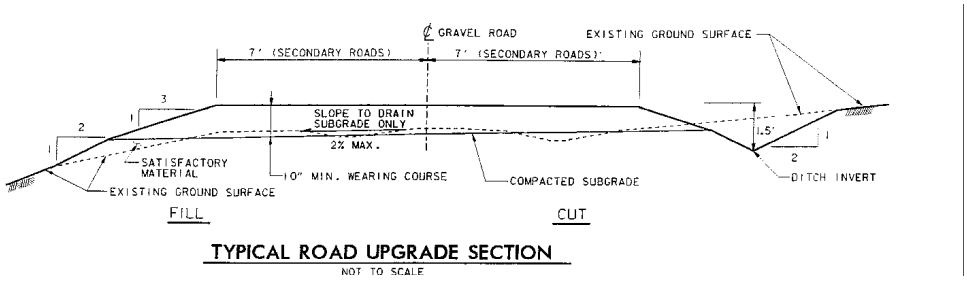
SPECIFICATION SECTION 01010
SUMMARY OF WORK

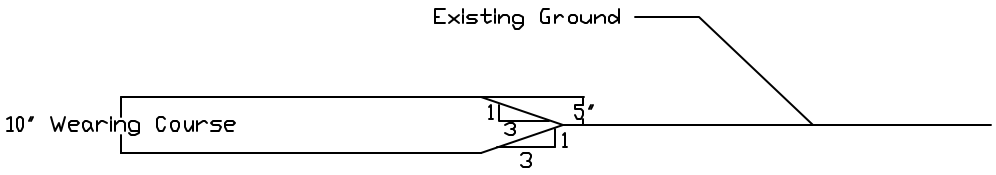
1.0 Selah Brigade Support Area (BSA)

1.1 Selah Brigade Support Area (BSA)

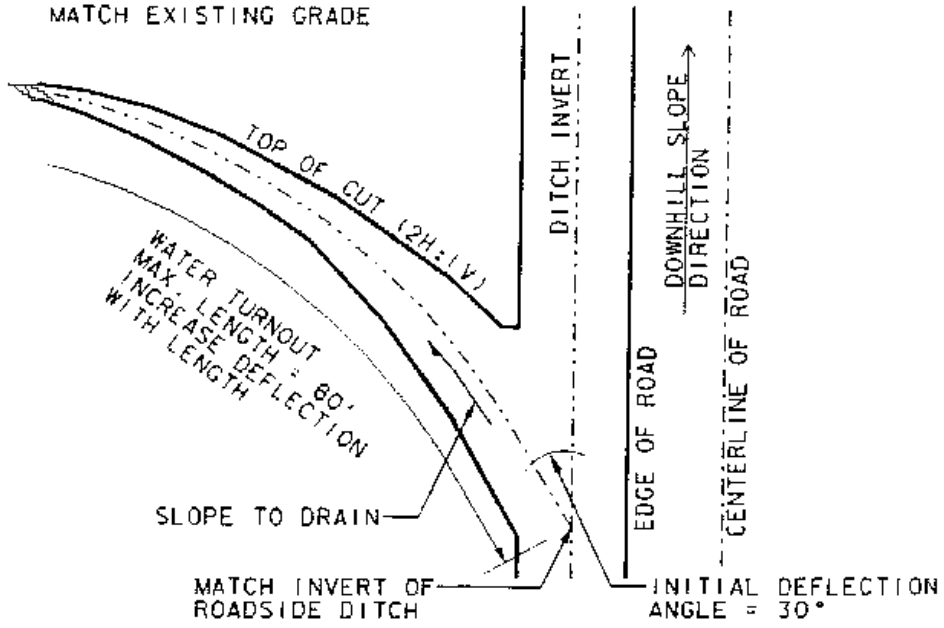
Work in the Selah BSA involves improving existing dirt roads to 14' wide roads with 10" of wearing course and construction of hardstand parking areas along side the roads. The contractor shall crush all wearing course necessary for these road improvements in the Selah Air Strip Pit. The roads shall be constructed per the details shown below and in accordance with the contract specifications. The typical road upgrade detail shows both the typical cut and fill sections; both sides of the road may be cut or fill depending upon the topography of the road. Water turnouts shall be constructed as necessary in accordance with the spacing table included with the Typical Water Turnout Detail shown below. The purpose of water turnouts is to redistribute water over the terrain and minimize erosion in the road ditches. Construction of the Selah BSA also includes installing turnout areas as shown on the detailed map of Roads 2, 3, and 4 and as listed in the Selah BSA Table. The exterior edge of the BSA hard stand areas shall be constructed as shown in the detail below so that there is a smooth transition from the hard stand area to the surrounding terrain. The > symbol on the Selah BSA Site Map represents rock weirs to be constructed using rental equipment hours. A large parking area is shown in three sections on the Selah BSA Hard Stand Areas drawing. This parking area shall have the subgrade prepared to the same standards as the road improvements and shall receive 10" of wearing course.



TYPICAL ROAD UPGRADE SECTION
NOT TO SCALE



Hardstand Edge



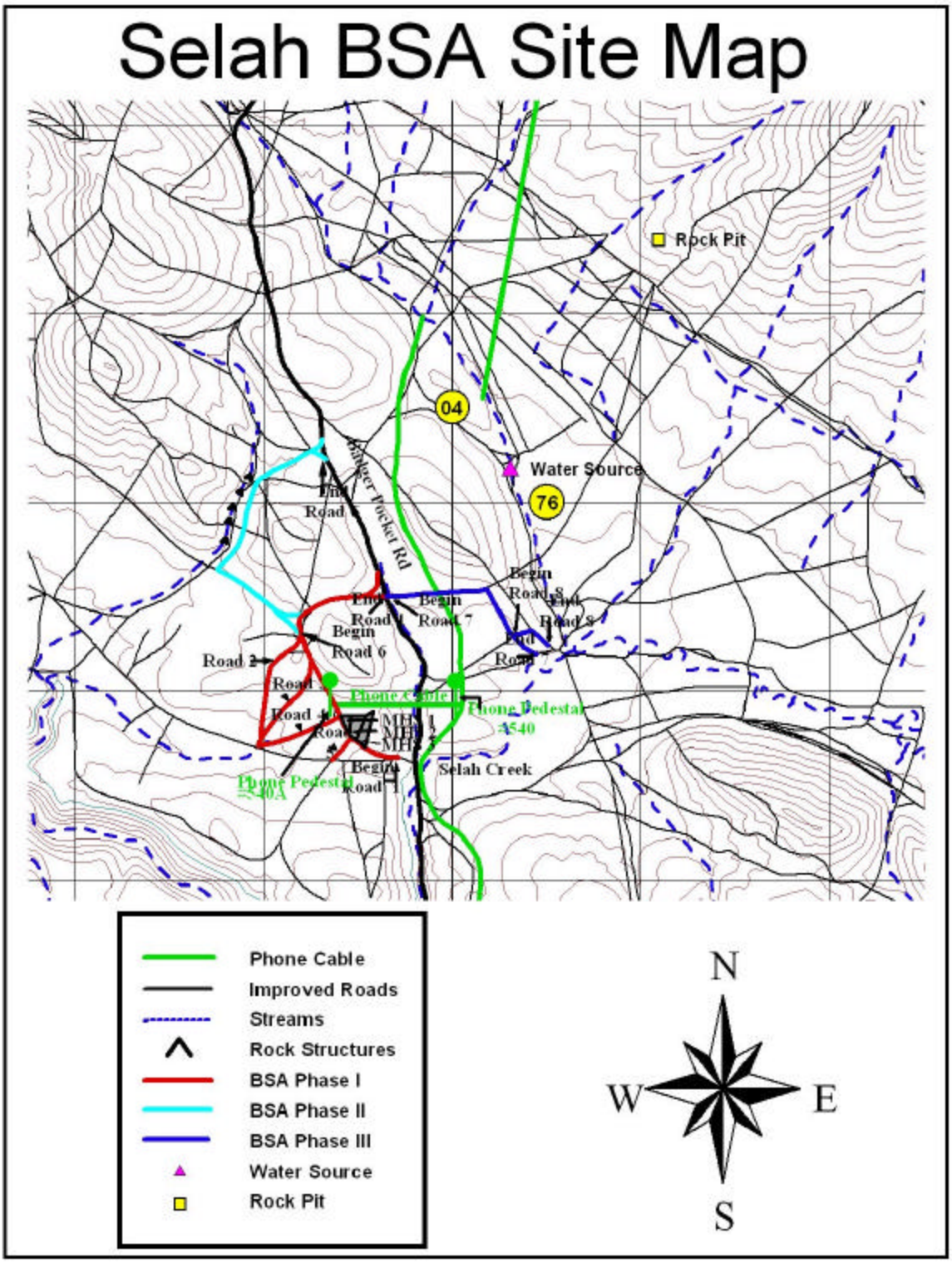
TYPICAL WATER TURNOUT DETAIL – PLAN VIEW

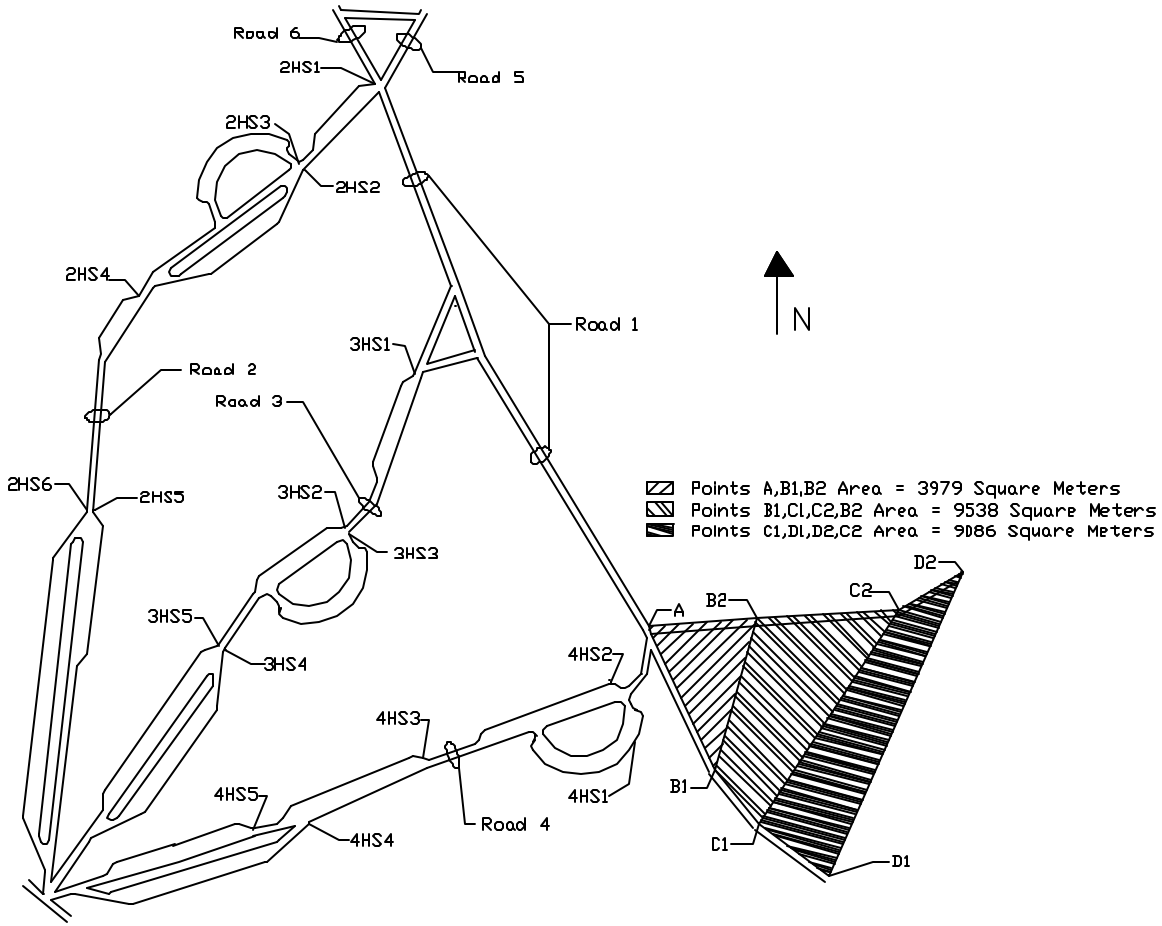
NOT TO SCALE

NOTE: Water turnouts shall not be placed within 100' of an existing drainage.

WATER TURNOUT SPACING

ESTIMATED ROAD GRADE	MAX DISTANCE BETWEEN TURNOUTS
0% to 5%	500'
5% to 8%	250'
8% to 10%	200'
10% to 12%	100'
12% +	50'


Selah BSA Site Map
Rock Pit
04
Water Source
76
Ringer Pocket Rd
Road 1
Road 2
Road 3
Road 4
Road 5
Road 6
Road 7
Road 8
Phone Cable
Phone Pedestal A540
Phone Pedestal A30A
Selah Creek
Phone Cable
Improved Roads
Streams
Rock Structures
BSA Phase I
BSA Phase II
BSA Phase III
Water Source
Rock Pit
N
W
E
S



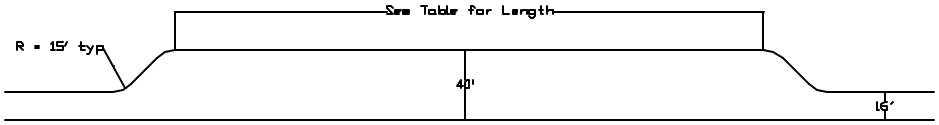
Selah BSA Hard Stand Areas

1.2 Selah BSA Table

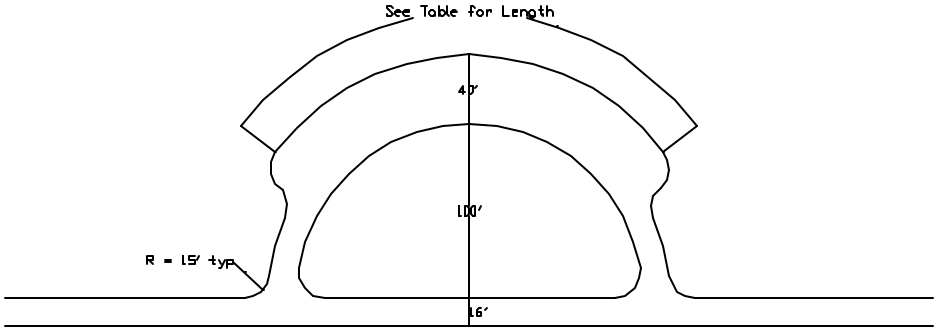
The ROAD column represents the road number as shown on the BSA site sketch, except for Road 10, which is shown on the Upland Drainage Site Map. The MILEAGE column represents the approximate mileage location for each feature. The SIZE column represents the dimensions for the feature. For turnouts the dimension is the length of the turnout as shown on the details below.

ROAD	MILEAGE	FEATURE	SIZE	COMMENTS:
1	0.0			Start of Road 1.
1	0.05	MHS		MHS is broken down into three areas as shown on the Selah BSA Hard Stand Map.
1	0.90			End of Road 1at intersection with Badger Pocket Road and Road 7
2	0.00			Start of Road 2
2		2HS1	180’	Type A BSA Turnout on West side of Road 2
2		2HS2	200’	Type C BSA Turnout on East side of Road 2
2		2HS3	400’	Type B BSA Turnout on West side of Road 2
2		2HS4	100’	Type A BSA Turnout on West side of Road 2
2		2HS5	300’	Type A BSA Turnout on East side of Road 2
2		2HS6	300’	Type C BSA Turnout on West side of Road 2
2	0.40			End of Road 2 at intersection of Roads 3 and 4
3	0.00			Start of Road 3, Improve all sides of existing Triangle Intersection
3		3HS1	200’	Type A BSA Turnout on East side of Road 3
3		3HS2	200’	Type A BSA Turnout on West side of Road 3
3		3HS3	450’	Type B BSA Turnout on East side of Road 3
3		3HS4	300’	Type C BSA Turnout on East side of Road 3
3		3HS5	400’	Type A BSA Turnout on West side of Road 3
3	0.30			End of Road 3 at intersection of Roads 2 and 4
4	0.00			Start of Road 4
4		4HS1	500’	Type B BSA Turnout on East side of Road 4
4		4HS2	300’	Type A BSA Turnout on West side of Road 4
4		4HS3	400’	Type A BSA Turnout on West side of Road 4
4		4HS4	350’	Type C BSA Turnout on East side of Road 4
4		4HS5	300’	Type A BSA Turnout on West side of Road 4
4	0.30			End of Road 4 at intersection of Roads 2 and 3
5	0.00			Start of Road 5 at intersections of Roads 1,2 and 6. Construct 200’ triangle intersection as shown on the Selah BSA Hard Stand Map.
5	0.40			End of Road 5
6	0.00			Start of Road 6 at intersection of Roads 1and 2. Construct 200’ triangle intersection as shown on the Selah BSA Hard Stand Map.
6	0.15	RSF	30’	Rock Spall Ford
6	0.55			Start of road reroute. Reroute moves road up the slope away from drainage.
6	1.00			End of road reroute.
6	1.00			End of Road 6
7	0.00			Begin Road 7 at intersection of Road 1 and Badger Pocket Road
7	0.61			End of Road 7
8	0.00			Begin Road 8 off of Road 7
8	0.15			End of Road 8
10	0.00			Start of Road 10; create ‘T’ intersection with existing road by

				straightening out last 100’ of existing dirt Road 10.
10	0.05	C-10		See Upland Drainage Feature Table for size.
10	0.20			End of Road 10. Blend road into shoulder of John Wayne Trail.

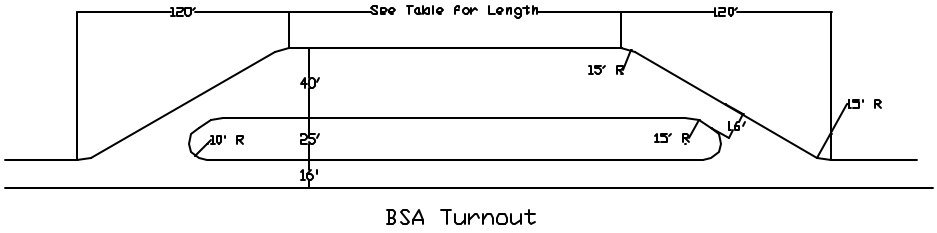


Type A BSA Turnout



BSA Turnout

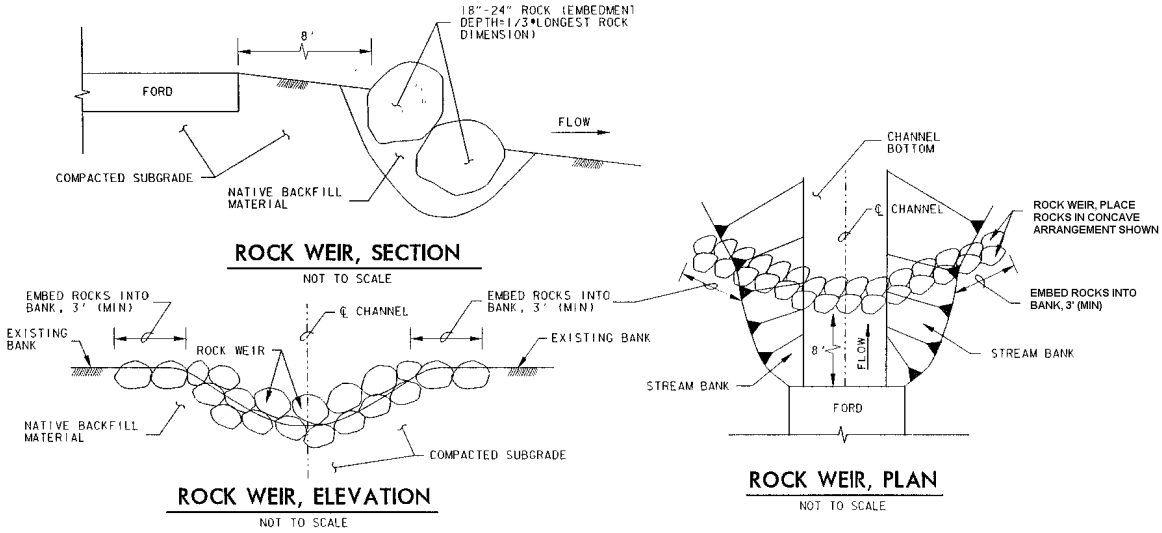
Type B BSA Turnout



Type C BSA Turnout

1.3 Rock Wiers

Rock weirs shall be constructed by use of the equipment hours for the dump truck and excavator. The weirs will be staked in the field and constructed under he direction of government QA Representatives and Yakima Training Center Public Works Staff. The exact dimensions and shape of the weirs will vary based upon channel shape, size and location of the weir. Below are some details showing approximate construction.



1.4 Phone Relocation @ Selah BSA

The following specification applies to all communication cables on Yakima Training Center. The only known crossing locations in this contract are as shown on the Selah BSA drawings. The phone crossings shall be relocated as specified in this section prior to performing any other construction activities for the Selah BSA improvements. All phone outages shall be coordinated and approved through the QA Representative with Yakima Training Center 1115th Signal and Operations Center.

1.4.1 Material requirements:

1.4.1.1 Cable –All buried communication cables shall be of a direct burial type and Jelly filled.

1.4.1.2 Splices – All splices shall be placed in above ground pedestals, unless otherwise noted. Pic-a-bond type splice connectors shall be used for all 19 AWG cables and all splices less than 25 pair in size. Pic-a-bond or 710 modular type splice connectors may be used with all 26 AWG, 24 AWG and 22 AWG cables 25 pair and larger.

1.4.1.3 Pedestals – Three types shall be used for the following applications:

1.4.1.3.1 Cad 6 type closures shall be used when total cable pairs entering pedestal do not exceed 200 pair and when there are no more than 3 cable sheaths entering or exiting the pedestal (e.g. two 100 pair cables = 200 pair cable).

1.4.1.3.2 Cad 8 type closures shall be used when total cable pairs entering pedestal do not exceed 400 pair and when total there are no more than 4 cable sheaths entering or exiting the pedestal (e.g. two 200 pr cables = 400 pair cable).

1.4.1.3.3 Cad 10 type closures shall be used when total cable pairs entering pedestal do not exceed 600 pair and when there are no more than 6 cable sheaths entering or exiting the pedestal (two 300 pr cables = 600 pair cable).

1.4.1.4 Terminals - All pedestals shall be installed with RGT25VSBA-4 type terminals. The count of the terminal shall be determined by YTC Signal Office.

1.4.1.5 Grounding Rods – Minimum 3/8 inch diameter, by 6 feet long.

1.4.1.6 Grounding wire and connectors – Minimum ground wire size shall be 10 AWG, connectors shall be appropriately sized for the ground rod and wire used.

1.4.1.7 Conduit – All conduit used shall be 3 inch rigid, threaded and coupled with steel couplers.

1.4.2 Installation and workmanship requirements:

1.4.2.1 Placement of buried cable – Cable may be placed through either open trench and back filling, or through plowing techniques. Buried Cables shall be placed at a minimum depth of no less than 24 inches. For open trench and back filling installations, cables shall be bedded with a minimum protective cover of either native or imported materials to prevent damage during back filling operations.

1.4.2.2 Road Crossings. In areas where cables cross roads or other designated high traffic areas where cables are susceptible to damage, the cable shall be placed in ridged conduit buried no less than three feet in depth. For any cable installed in ridged conduit, the conduit shall extend a minimum of 5 feet beyond the high impact area (e.g. extend 5 feet beyond the outer edge of borrow ditches at all road crossing sites).

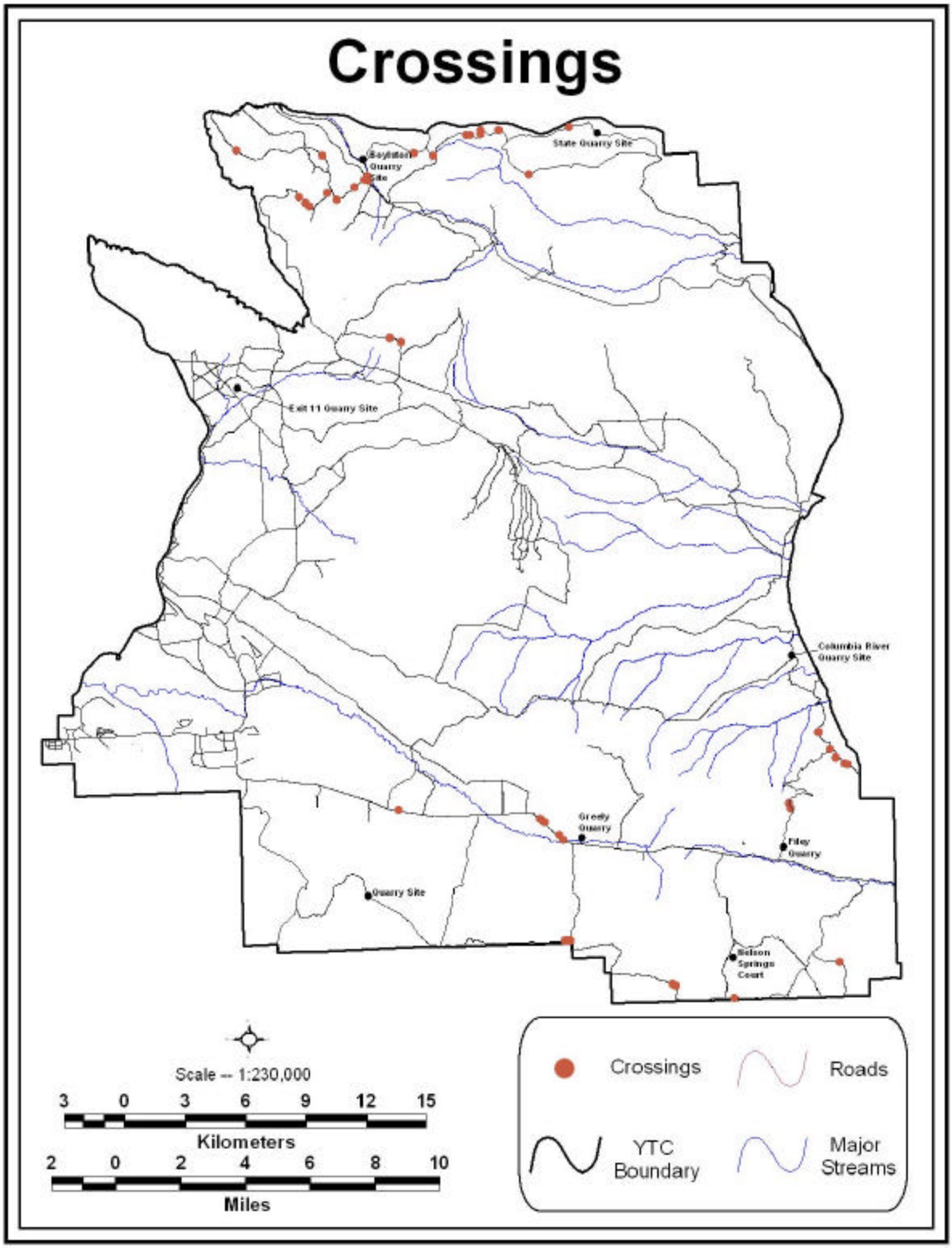
. **Cable Splices** – All cable splices shall be placed in above ground pedestal closures (CAD type and size selection described above).

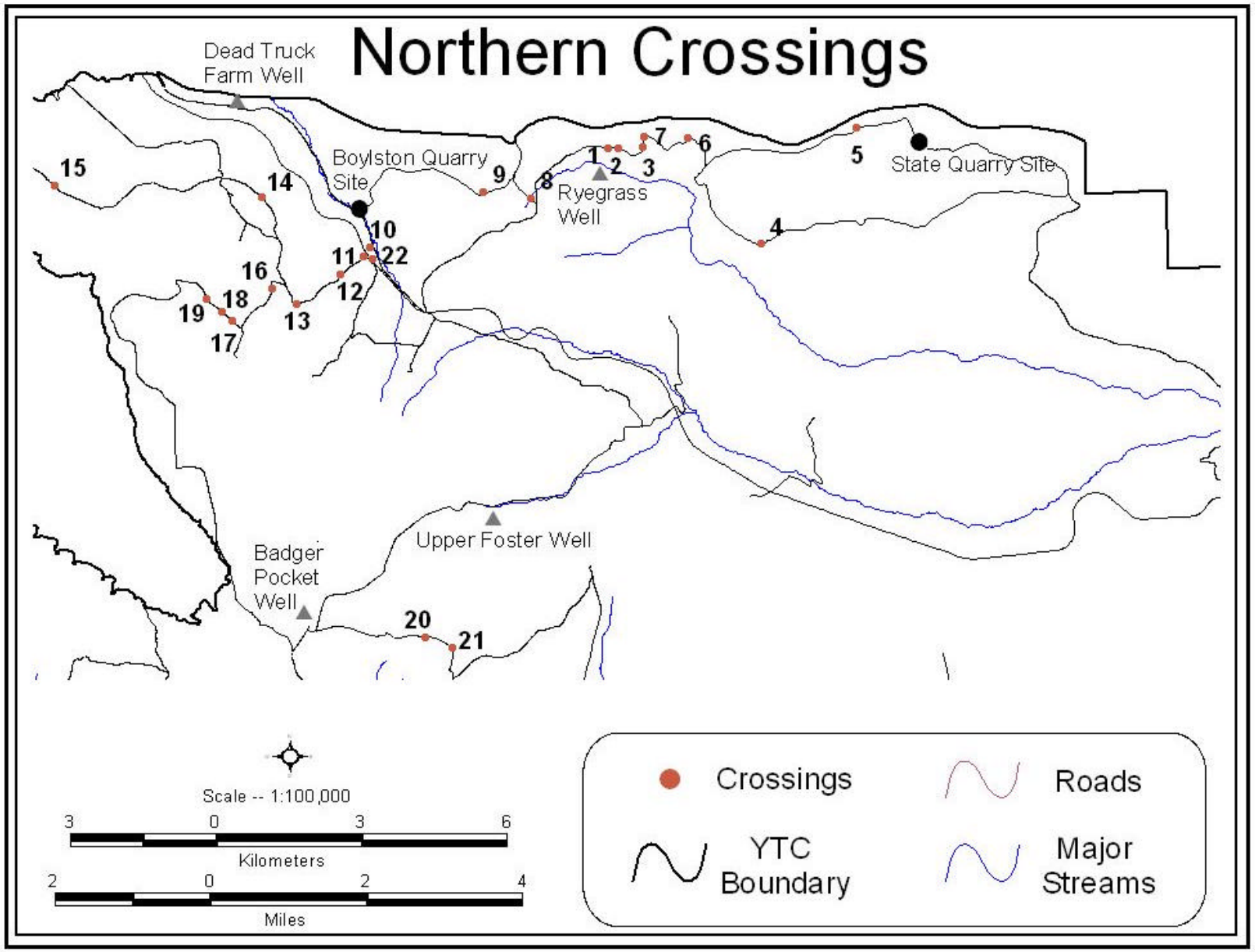
a. All pedestals shall be installed with a ground rod. Ground rods may be installed and oriented horizontally in the same trench as the buried cable.
b. All splices shall of the fold back type. Workmanship shall be in accordance with material manufacturer requirements, and industry standards. All pedestals shall be filled completely with clean pea gravel from the bottom of the pedestal (below ground) up to and level with the removable cover.
c. Pedestals shall be installed in accordance with manufacturers requirements centered on mounds measuring 6 feet in diameter, at least 2 feet high. Mounds may be constructed from fill material imported from approved borrow locations.

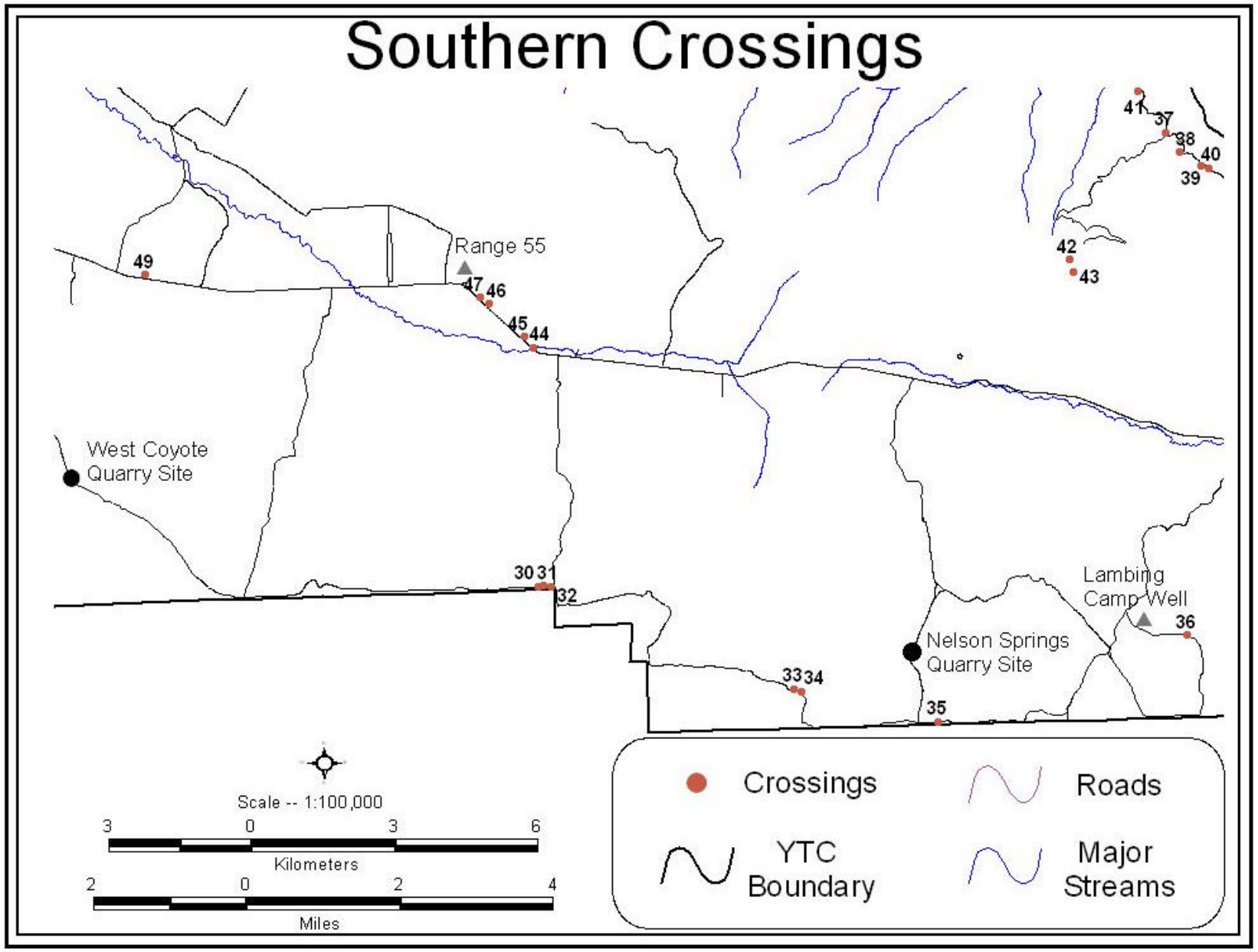
1.4.3 Testing of Completed Communication Cable and Related Features – All components installed or repaired shall be 100% tested by the Contractor to ensure 100% usefulness of equipment installed.

3.0 Upland Drainage

3.1 Upland Drainage Site Maps




Northern Crossings
Dead Truck Farm Well
Boylston Quarry Site
Ryegrass Well
State Quarry Site
Upper Foster Well
Badger Pocket Well
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Scale -- 1:100,000
3 0 3 6
Kilometers
2 0 2 4
Miles
Crossings
Roads
YTC Boundary
Major Streams


Southern Crossings
Range 55
West Coyote
Quarry Site
Lambing
Camp Well
Nelson Springs
Quarry Site
49
47
46
45
44
42
43
41
37
38
40
39
30
31
32
33
34
35
36
Scale -- 1:100,000
3 0 3 6
Kilometers
2 0 2 4
Miles
Crossings
Roads
YTC
Boundary
Major
Streams

3.2 Upland Drainage Feature Table

The **ID** column represents the identification of the drainage feature. The **Feature Type** column indicates the type of drainage feature to be installed. Drainage feature types include **C** — **C**ulvert, **EEC**— **E**xtend **E**xisting **C**ulvert, **RI** — **R**oad **I**ntersection, **RRC** — **R**emove and **R**eplace an existing **C**ulvert, **G** — **G**eocellular **F**ord, **RCG** — **R**emove **C**attle **G**uard, **RSF** — **R**ock **S**pall **F**ord, **ROCK**— **Rock** work (varies), **CF** — **C**oncrete **F**ord, **ACF** — **A**rticulated **C**oncrete **F**ord, **SPC** — **S**quash **P**ipe **C**ulvert, and **AC** — **A**rch **C**ulvert. The **L** column represents the length of the feature in feet. The **W/D** column represents the **W**idth or **D**iameter of the feature in feet. The **UTM** columns represent GPS coordinates taken using an Eagle Expedition II GPS and based upon the Universal Transverse Meroater Zone 10 & Zone 11 - World Geodetic System of 1984 (UTM10-WGS84 & UTM11-WGS84) used on Yakima Training Center. The **Comment** column pertains to any special requirements associated with the installation of the drainage feature.

ID	Feature Type	L (ft.)	W/D (ft.)	UTM		Comment
				E	N	
1	RSF	40’	16’	10714799	5202215	Ensure dip is achieved in center of ford for drainage.
2	RSF	40’	16’	10715004	5202225	Ensure dip is achieved in center of ford for drainage.
3	C	40’	2’	10715516	5202253	Over excavate ditch 2’ deep on up hill side of culvert for 150’. Install rock spalls 1.5’ deep in over excavated ditch. Excavate an area 6’ in diameter and 4’ deep at the inlet to the culvert, fill the excavation with rock spalls up to the inlet invert of the culvert.
4	RSF	40’	16’	10717940	5200250	Ensure dip is achieved in center of ford for drainage.
5	RSF	40’	16’	10719905	5202626	Ensure dip is achieved in center of ford for drainage.
6	RSF	40’	16’	10716440	5202434	Ensure dip is achieved in center of ford for drainage.
7	RSF	40’	16’	10715534	5202457	Existing drainage is at a 45º to the road, ensure that low point of ford maintains angle of the drainage. Create 1-foot raise in road surface over 15-feet of road length east of C-7 to ensure water will drain across the ford. Regrade/reshape existing road and ditch on up hill side from C-3 to C-7, approximately 300 feet.
8	RRC	40’	2’	10713192	5201181	
9	RSF	40’	16’	10712218	5201315	Ford is located at a curve.
10	C	45’	2’	10709906	5200167	Provide a minimum of 3 feet of cover over the culvert.
11	RRC	40’	2’	10709766	5199982	At inlet to culvert, excavate area 8-feet in diameter and 4-feet deep. Fill excavation with rock spalls up to culvert inlet elevation.
12	C	55’	2’	10709279	5199609	Install culvert is at 45º angle to road to match drainage.
13	EEC	8’	2’	10708382	5199013	Expose and remove last 3-feet from both the inlet and outlet of the existing culvert. On each side add 5-feet of culvert. New sections of culvert shall have beveled ends.
14	RSF	40’	16’	10707679	5201203	
15	RSF	20’	16’	10703391	5201454	
16	EEC	10’	2’	10707888	5199339	Expose both the inlet and outlet of the existing culvert. Extend the inlet end of the culvert 4-feet and the outlet of the culvert 6-feet. New sections of culvert shall have beveled ends.
17	EEC	9’	2’	10707050	5198671	Expose both the inlet and outlet of the existing culvert. Extend the inlet end of the culvert 4-feet and the outlet of the culvert 5-feet. New sections of culvert shall have beveled ends.
18	EEC	5’	2’	10706853	5198856	Expose outlet of the existing culvert. Extend the outlet

ID	Feature Type	L (ft.)	W/D (ft.)	UTM		Comment
				E	N	
						section of the culvert 5-feet. New section of culvert shall have beveled ends.
19	EEC	6’	2’	10706534	5199112	Expose outlet of the existing culvert. Extend the outlet section of the culvert 6-feet. New section of culvert shall have beveled ends. Excavate an area 6-feet in diameter and 4-deep at the inlet to the existing culvert. Fill the excavation with rock spalls to the inlet invert of the existing culvert.
20	C	40’	2’	10711031	5192159	Excavate an area 6-feet in diameter and 4-deep at the inlet to the existing culvert. Fill the excavation with rock spalls to the inlet invert of the existing culvert. Over excavate the up hill ditch 100-feet west of C-20 to a depth of 2-feet. Fill the ditch over excavation with rock spalls to within 6-inches of the road height.
21	EEC	10’	2’	10711583	5191940	Expose both the inlet and outlet of the existing culvert. Extend the inlet end of the culvert 4-feet and the outlet of the culvert 5-feet. New sections of culvert shall have beveled ends. Reslope the road fill for a distance of 20-feet on each side the culvert to match the new culvert inlet and outlet openings.
22	RSF	30’	16’	10710000	5199788	Ensure dip is achieved in center of ford for drainage.
30	RSF	40’	16’	10719727	5162223	Remove silt deposit on upstream side of road from channel. Remove silt deposit on downstream side of road. Provide 5’wide x 20’ long rock spall apron directly downstream of ford in existing channel.
31	RSF	30’	16’	10719836	5162228	Remove silt deposit on upstream side of road from channel. Remove silt deposit on downstream side of road. Provide 5’wide x 20’ long rock spall apron directly downstream of ford in existing channel.
32	C	40’	2’	10720001	5162225	
33	C	40’	2’	10725071	5160074	Provide 5’ wide x 15’ long rock spall area at outlet of culvert.
34	RSF	20’	16’	10725229	5160021	Remove silt deposit on upstream side of road from channel. Remove silt deposit on downstream side of road. Provide 5’wide x 20’ long rock spall apron directly downstream of ford in existing channel.
35	C	40’	2’	10728107	5159389	
36	RSF	20’	16’	11273485	5160936	Remove silt deposit on upstream side of road from channel. Remove silt deposit on downstream side of road. Provide 5’wide x 20’ long rock spall apron directly downstream of ford in existing channel.
37	ROCK			11273824	5171476	Provide 30 cyds of riprap and rock spall material on downstream side of existing geocellular ford. Rock shall be installed to prevent further erosion of the geocellular ford.
38	ROCK			11274088	5171043	Provide 15 cyds of riprap and rock spall material on downstream side of existing geocellular ford. Rock shall be installed to prevent further erosion of the geocellular ford.

ID	Feature Type	L (ft.)	W/D (ft.)	UTM		Comment
				E	N	
39	ROCK			11274515	5170732	Provide 15 cyds of rock spall material on downstream side of existing geocellular ford. Rock shall be installed to prevent further erosion of the geocellular ford.
40	ROCK			11274659	5170672	Provide 10 cyds of rock spall material on downstream side of existing geocellular ford. Rock shall be installed to prevent further erosion of the geocellular ford.
41	ROCK			11273300	5172373	Provide 20 cyds of riprap and rock spall material on downstream side of existing geocellular ford. Rock shall be installed to prevent further erosion of the geocellular ford.
42	C	55’	2’	11271604	5168983	Culvert is at 45° to existing road.
43	C	55’	2’	11271675	5168711	Culvert is at 45° to existing road.
44	RCG			10719630	5167230	Remove existing cattle guard, fill area with wearing course material and compact. Cattle guard shall be placed approximately 30’ away from the road adjacent to current direction.
45	ROCK			10719422	5167456	Provide 60 cyds of rock riprap and rock spall material on downstream side of existing geocellular ford on the tank trail adjacent to Cold Creek Road. Rock shall be installed to prevent further erosion of the geocellular ford and construct rock weirs.
46	ROCK			10718682	5168136	Provide 15 cyds of rock riprap and 10 cyds of rock spall material on downstream side of existing geocellular ford on the tank trail adjacent to Cold Creek Road. Rock shall be installed to prevent further erosion of the geocellular ford and construct rock weirs.
47	ROCK			10718500	5168267	Provide 15 cyds of rock riprap and rock spall material on downstream side of existing geocellular ford on the tank trail adjacent to Cold Creek Road. Rock shall be installed to prevent further erosion of the geocellular ford and construct rock weirs.
48	RI					Construct 4-way road intersection where tank trail meets existing improved road. Improved portion of tank trail shall consist of 10” of wearing course, 28’ wide and extend 50’ both east and west from the existing improved road. Turn radius’ shall be 30’
49	ROCK			10711481	5168743	Provide 20 cyds of riprap and rock spall material on downstream side of the existing geocellular ford on the tank trail adjacent to Cold Creek Road. Rock shall be installed to prevent further erosion of the geocellular ford.

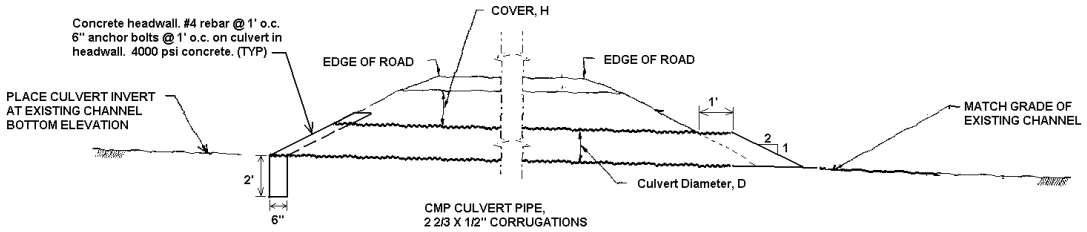
4.0 Road 45C Addi tion

The road construction shown on the drawings shall be constructed in accordance with the specifications and details shown elsewhere in Section 01000 Statement of Work. Road 45C and Doris borrow pits shall be used for construction of the Road 45C Addition, wearing course stockpiled at other borrow pits in this project shall not be used for improving Road 45C.

5.0 Drainage Features

5.1 Culverts (C)

Install new culverts as described in the table above and per the contract specifications and the details shown below. The culvert inlet and outlet inverts shall match the existing drainage bottom. The headwall shown above shall be installed only if indicated within the table above. If no headwall is called for, the culvert inlet shall match the culvert outlet as shown in the detail below. The culvert lengths and diameters are as indicated in the table above.



SECTION THROUGH CENTERLINE OF CULVERT PIPE

NOT TO SCALE

5.2 Extend Existing Culvert (EEC)

Work shall be performed in accordance with culvert specification and culvert details. A new band shall be used to fasten the new culvert section to the existing section. If the existing culvert end is beveled, the existing culvert shall be cut square prior to extending the culvert.

5.3 Remove Cattle Guard (RCG)

Existing Cattle Guard shall be removed and relocated up to 50’ away from existing road per direction by the Quality Assurance Representative. The hole resulting from the cattle guard removal shall be backfilled with wearing course to match the existing road elevation.

5.4 Road Intersection (RI)

Construct a wearing course road intersection as described in the table above. Grading and compaction shall be in accordance with the contract specifications.

5.5 Rock Work (ROCK)

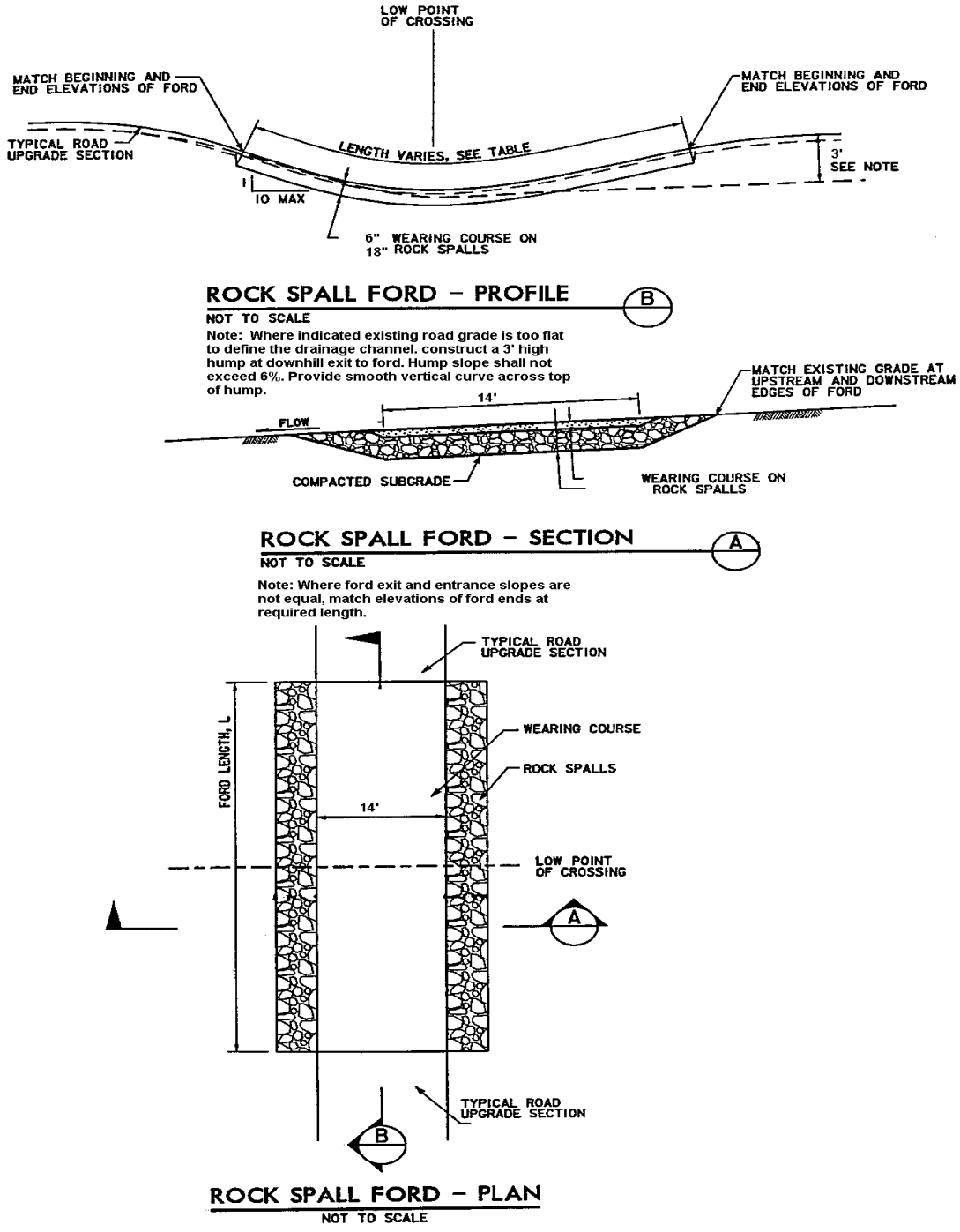
Rock work entails hauling rock spall or riprap from the sources indicated and placing the rock as directed with an excavator with thumb. The excavator shall be no smaller than the size indicated in the rental equipment unit bid item.

5.6 Remove and Replace an Existing Culvert (RRC)

Work shall be performed in accordance with culvert specification and culvert details shown elsewhere in this contract. The existing culvert, which has been removed, shall become property of the contractor and shall be disposed of off Yakima Training Center.

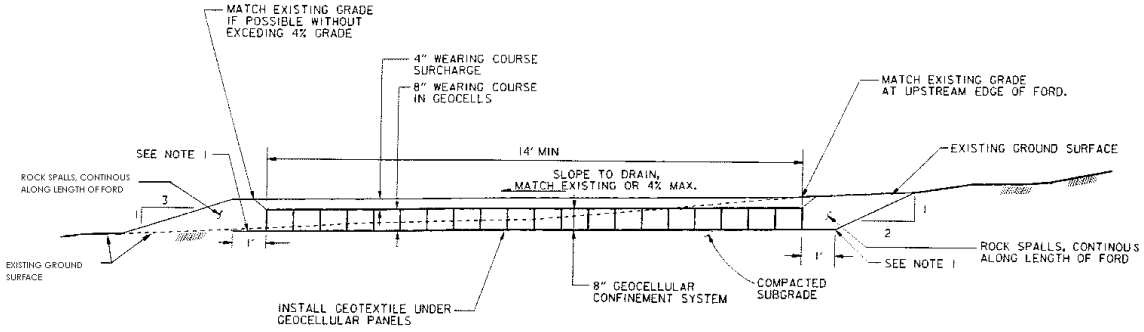
5.7 Rock Spall Ford (RSF)

Rock Spall Fords consist of a layer of rock spalls installed under the wearing course in minor and flat drainages. The ford area shall be excavated and compacted in accordance with the specifications The excavation shall then be filled with rock spalls to the depth required by the detail and covered with wearing course material as shown on the details below.



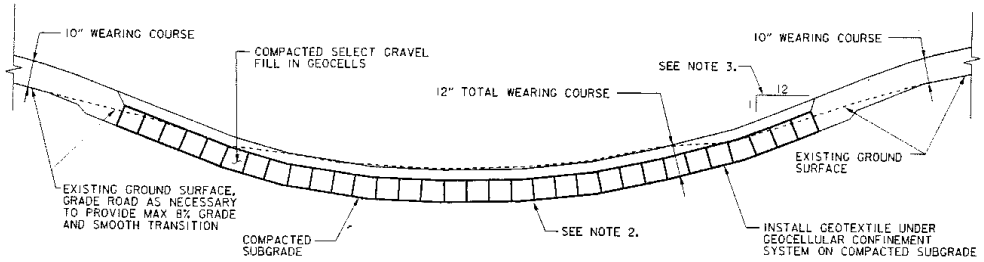
5.8 Geocellular Ford (G)

Geocellular Fords consist of a layer of rock spalls installed under the wearing course in minor and flat drainages. The ford area shall be excavated and compacted in accordance with the specifications The excavation shall then be filled with rock spalls to the depth required by the detail and covered with wearing course material as shown on the details below.



TYPICAL GEOCELLULAR FORD CROSS SECTION

SCALE: 1" = 2'

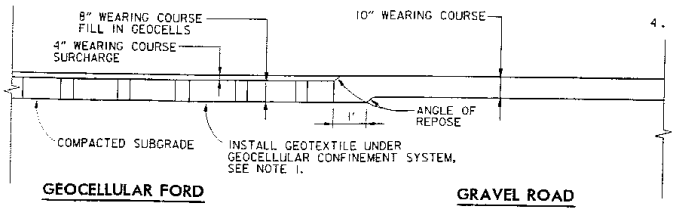


TYPICAL GEOCELLULAR FORD PROFILE

NOT TO SCALE

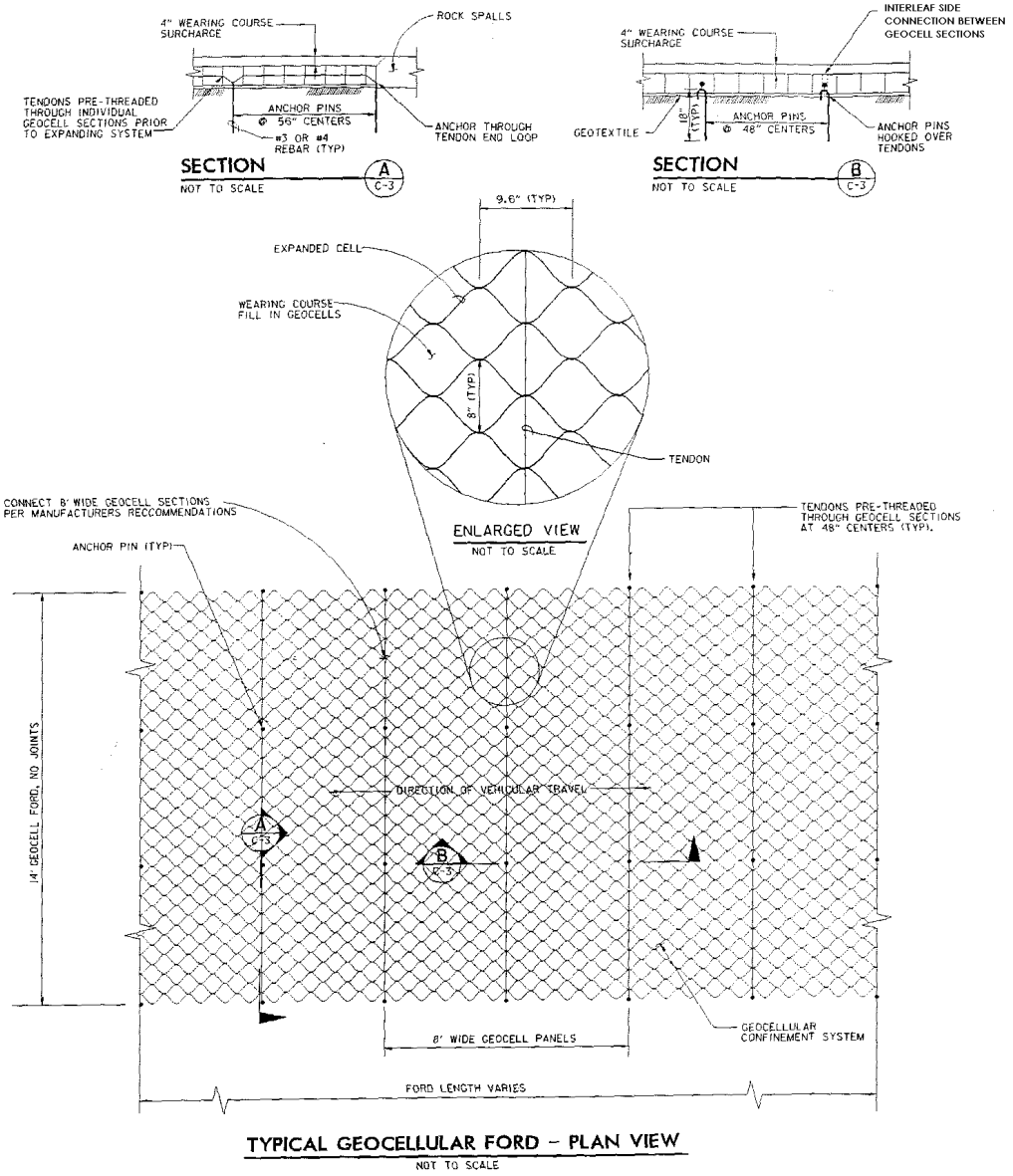
NOTES:

1. EXTEND GEOTEXTILE TO A MINIMUM OF 1 FOOT BEYOND EDGE OF GEOCELLULAR CONFINEMENT SYSTEM ON ALL SIDES OF FORD.
2. EXCAVATE TO ALLOW PLACEMENT OF GEOCELLULAR FORD TO MATCH EXISTING GRADE OF STREAM BED AT UPSTREAM EDGE OF FORD.
3. MAXIMUM ENTRANCE/EXIT GRADE FOR FORDS IS 8%. WHERE EXISTING ROAD GRADE IS GREATER THAN 8% RE-GRADE ROAD SO THAT GEOCELL PANELS DO NOT SIT ON GRADES GREATER THAN 8%.
4. FORDS SHALL BE INSTALLED AND APPROACH ROADS RE-ALIGNED AS NECESSARY SO THAT NO CHANGE OF HORIZONTAL DIRECTION OCCURS WITHIN THE AREA OF THE GEOCELLULAR PANELS.



TYPICAL JUNCTION BETWEEN GEOCELLULAR FORD AND GRAVEL ROAD

NOT TO SCALE



6.0 Borrow Pits and Wells

6.1 Borrow Pits

Borrow Pit	Wearing Course	Rock Spalls	RIPRAP
Bolyston	X	X	
State Pit	X	X	X
Columbia River	X	X	X
Filey Road	X		
Greely	X	X	
Nelson Springs	X	X	
Exit 11	X	X	X

6.2 Wells

6.2.1 The wells available for use during construction of features in this contract are listed below. During Fire Season and troop training, use of the well capacity will be limited to half of the stated Storage Capacity. This is required to maintain sufficient water storage to fight any fires that may occur and provide sufficient water to support troop training. No temporary generators shall be hooked-up to any of the wells until a wiring schematic has been provided through the QA Representative to Yakima Training Center Public Works for approval. The contractor shall notify the Government a minimum of three (3) working days prior to installing any temporary power for the wells listed below.

6.2.2 Contractor is responsible for maintenance of the well generators during use of the wells. Yakima Training Center prior to use by the Contractor shall fill the gas fuel tanks. The Contractor shall completely refill the gas fuel tanks prior to demobilization. Past experience indicates that the generators will average 5 gallons of propane per hour of operation. During the heating season, the generators will average 10 gallons of propane per hour of operation due to the additional gas required to operate the heaters. Maintenance on the generators consists of oil and oil filter changes every 100 hours of operation and replacement of the air filters every 500 hours of operation.

Water Source	Location (UTM) E	Location (UTM) N	Well Pump GPM	Storage Capacity (Gallons)	Remarks
Range Control	033	726	180	375,000	2, 5, and 6
Selah Air Strip	042	762	50	18,000	1, 2, and 3
Badger Pocket	086	924	80	100,000	1and 2
Upper Foster	119	949	20	12,000	1and 4
Doris	282	950	85	200,000	1and 2
Ryegrass	145	021	50	20,000	1 and 3
Dead Truck Farm	072	032	25	18,000	1, 2, and 5
Range 55	182	032	50	18,000	1, 2, and 3
Landing Camp	725	686	8	20,000	1 and 4
East Coyote	122	614	20	12,000	1 and 4

Notes/Remarks:

1. Contractor use must maintain 50% of the storage during periods of military training in the area, and from June 1 to October 1 for fire protection.
2. Potable water source, Contractor shall provide backflow prevention/protection of this source when drawing water.
3. Propane power source to pump water. Contractor shall provide all fuel and generator maintenance for period of use, including providing for concurrent Government use of water from this facility. Generator is manually operated for start up. Use of the facility requires training by YTC DPW personnel to ensure proper operation and maintenance.
4. Non-potable fire suppression well equipped with solar and 240 volt pumps. No generator at site. Systems are normally set for the solar system to fill and maintain the storage tank. Contractor shall provide and maintain generator if 240V pump is used.
5. Well source is wired to hard power source, system includes auto-run/shut down system to refill tank as water is drawn.
6. No more than 100,000 gallons per day can be drawn from this source.

7.0 Rock Crushing and Stockpiling

Wearing Course Material crushed and stockpiled at the 45C borrow pit under Base Bid Item 0005 and Wearing Course crushed and stockpiled at the Doris borrow pit under Optional Bid Item 0028 and Rock Spalls crushed and stockpiled at the 45C borrow pit under Optional Bid Item 0029 and Rock Spalls crushed and stockpiled under Optional Bid Item 0030 shall be measured in accordance with SC-6 and shall meet the gradations as specified in Specification Section 02506, paragraphs 2.2 Wearing Course Material and 2.3 Rock Spalls for general purpose. Location of Stockpiles shall be coordinated as part of the overall pit development plan. Rock crushing for Base Bid Item 0005 shall be completed by April 30, 2002.

END OF SECTION

SPECIFICATION SECTION 01040

GENERAL REQUIREMENTS

1. COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK

The Contractor shall be required to (1) commence work under this Contract within 10 calendar days after the date the Contractor receives notice to proceed, (2) prosecute the work diligently, and (3) complete the entire work ready for use not later than 270 calendar days after the date of receipt by Contractor of notice to proceed. The time started for completion shall include final cleanup of the premises. See Section 01061 ENVIRONMENTAL PROTECTION for work restrictions/construction phasing required for this work.

4 OPTION FOR INCREASED QUANTITY

a. The Government may increase the quantity of work awarded by exercising one or more of the Optional Bid Items(s) 0008 through 0030 at any time, or not at all, but no later than 150 calendar days after receipt by Contractor of notice to proceed. Notice to proceed on work Item(s) added by exercise of the option(s) will be given upon execution of consent of surety.

b. The parties hereto further agree than any option herein shall be considered to have been exercised at the time the Government deposits written notification to the Contractor in the mails.

c. The time allowed for completion of any optional items awarded under this contract will be the same as that for the base item(s), and will be measured from the date of receipt of the notice to proceed for the base item(s).

2. LIQUIDATED DAMAGES – CONSTRUCTION

(a) If the Contractor fails to complete the work within the time specified in the Contract, or any extension, the Contractor shall pay to the Government as liquidated damages, the sum of $850 for each day of delay.

(b) If the Government terminates the Contractor's right to proceed, the resulting damage will consist of liquidated damages until such reasonable time as may be required for final completion of the work together with any increased costs occasioned the Government in completing the work.

(c) If the Government does not terminate the Contractor's right to proceed, the resulting damage will consist of liquidated damages until the work is completed or accepted.

3. VARIATIONS IN ESTIMATED QUANTITIES – SUBDIVIDED ITEMS: This variation in estimated quantities clause is applicable to Item Nos. 0005, 0006, 0007, 0028, 0029 and 0030.

(a) Variation from the estimated quantity in the actual work performed under any second or subsequent sub-item or elimination of all work under such a second or subsequent sub-item will not be the basis for an adjustment in contract unit price.

(b) Where the actual quantity of work performed for Items Nos. 0005, 0006, 0007, 0028, 0029 and 0030 is less than 85% of the quantity of the first sub-item listed under such item, the Contractor will be

paid at the contract unit price for that sub-item for the actual quantity of work performed and, in addition, an equitable adjustment shall be made in accordance with the clause FAR 52.211-18, Variation in Estimated Quantities.

If the actual quantity of work performed under Items Nos. 0005, 0006, 0007, 0028, 0029 and 0030 exceeds 115 percent or is less than 85 percent of the total estimated quantity of the sub-item under that item and/or if the quantity of the work performed under the second sub-item or any subsequent sub-item under Items Nos. 0005, 0006, 0007, 0028, 0029 and 0030 exceeds 115 percent or is less than 85% of the estimated quantity of any such sub-item, and if such variation causes an increase or a decrease in the time required for performance of this contract the contract completion time will be adjusted in accordance with the clause FAR 52.211-18, Variation in Estimated Quantities.

4. CONSTRUCTION SCHEDULING

4.1 CONSTRUCTION PROGRESS CHARTS AND STATUS REPORTS:

4.1.1 The instructions and information herein supplement the requirements of Paragraph SCHEDULE FOR CONSTRUCTION CONTRACTS IN THE CONTRACT CLAUSES. The proposed Construction Progress Chart shall be prepared on ENG Form 2454. Additional instructions are obtained in INSTRUCTIONS AND INFORMATION FOR CONTRACTORS, a manual furnished to the Contractor by the Contracting Officer. This manual is available for inspection in the Office of the Seattle District, Corps of Engineers 4735 East Marginal Way South, Seattle, Washington.

4.1.2 The Minimum principal contract features (activities) to be included on ENG Form 2454 shall represent the work in each of the following divisions:

(a) SITE WORK (To be broken down by Bid Items)

4.2 The Construction Progress Chart shall show the total bid amount distributed among the features shown on the chart. The schedule shall show the percentage of completion at the close of each weekly period. This percentage shall be based on percentage of physical completion of the work. (NOTE: Mobilization and demobilization shall not be listed as a separate payment item unless so noted in the schedule and included as bid items.)

4.3 The Construction Progress Chart shall be submitted within 10 calendar days after the date of receipt of notice to proceed.

4.4 The Contractor shall prepare and submit a monthly project status report. The report shall tell whether the project as a whole is on, ahead of, or behind schedule. If the project is behind schedule, the Contractor shall explain what actions he will take to regain his schedule. The report shall include a description of the problem areas, delaying factors and their impact, and an explanation of corrective actions taken or proposed. Any delays caused by the Government shall be identified. Any significant items or events that occurred during the report month shall also be detailed.

4.5 In preparation of the project schedule the contractor shall coordinate construction activities with the YTC Range Operations Center (Range Scheduler). Coordination shall be done with the Range Scheduler can be reached at (509) 577-3418/3361.

5 COORDINATION AND ACCESS TO SITE

5.1 Coordination with using agency shall be made through the Yakima Training Center Public Works (PW) to assist the Contractor in completing his work with a minimum of interference and inconvenience to occupants in the vicinity and other craftsmen who may be working on the site.

5.2 All vehicles and drivers entering the base shall have valid current licenses. Those entering in privately-owned vehicles or unmarked Contractor vehicles shall obtain a visitor's pass each time they enter unless that vehicle will be repeatedly used; then the Contractor is responsible for obtaining vehicle permits from YTC Operations Center, phone (509) 577-3280.

5.3 Keys required by the Contractor for access to the building/area for this project shall be obtained through the PW, YTC. The Contractor has no right of access to places or at time when he is not specifically granted such access by other provisions of this contract, or by PW, YTC.

5.3.1 The Contractor shall be responsible for Government-owned keys issued for access to facilities or areas pertinent to this Contract.

5.3.2 Upon completion of the work in an area, or upon request of the Contracting Officer, the key or keys relevant to the completed area shall be returned.

5.3.3 Should the Contractor lose a key:

a. The Contracting Officer shall be notified, in writing, within three (3) working days after the loss is discovered and

b. should the key not be found before final acceptance, the final contract payment shall be reduced by $100 for each key not returned.

5.4 Work hours in the construction area will be restricted to daylight hours, Monday through Friday, excluding federal holidays. Work hours other than as specified above shall be coordinated with and approved by the Contracting Officer. Under no circumstances will after-dark use of headlights be allowed on the installation, unless approval in writing is received from YTC Operations Center, phone (509) 577-3280.

5.5 Contractor personnel shall not enter areas which have been "siber staked" without advance permission from the Contracting Officer (Siber stakes are PVC pipe with reflective tape attached to the "T" fence posts, and are used to designate environmentally and culturally sensitive areas).

5.6 Government use of the facilities within the project areas is anticipated while the work of this contract is being performed. Contractor will have to maintain at least one lane open for traffic throughout construction unless a detour route approved by the Contracting Officer is established. The work shall be planned and accomplished so that there will be a minimum of interference and inconvenience to occupants and agencies in the vicinity and to other craftsmen who may be working on other sites. The contractor shall be required to coordinate all operations with the YTC Operations Center (509) 577-3280 prior to beginning work on the project. From this coordination, the contractor shall develop a work plan to accomplish this project.

6 TEMPORARY ACCESS ROADS

6.1 Construction of any new access roads shall be coordinated with and approved by the Contracting Officer a minimum of 10 working days in advance of constructing any new access roads.

6.1.1 Contractor shall stake/mark proposed route of new access road prior to coordination with Contracting Officer.

6.1.2 Siting of temporary access routes shall not be placed closer than 100 feet from any drainages and stream channels, except for final approach to the construction site, nor shall these temporary routes intersect any siber-staked areas. Priority shall be given to improving or re-constructing existing roads/trails accessing an area over construction of entirely new roads.

6.1.3 Rationale for controlling placement and closure of new access routes is to limit secondary environmental impacts associated with creation of new roads in sensitive areas.

6.2 After completion of the construction feature(s) associated with the new access road, the Contractor shall return the access road to its original slope and grade, and contour the area within 7 days to protect it from erosion and to prepare the site for reseeding. The Contractor shall also seed the access roads with native species between 1 October and 1 November. The Contractor shall notify the Contracting Officer in advance of the start of this work.

7. SEQUENCE OF WORK

The Contractor shall coordinate construction activities with the Range Scheduling Officer located at YTC Operations Center. When Training Activities are occurring in the vicinity of construction a representative from the contractor is required to attend the 1500 Hours (3:00 PM) Briefing twice weekly. The 1500 Hours Briefing is held at Range Control Forward, Building 1805. At this briefing all training and construction activities will be coordinated to ensure safe range operations. Schedule of troop activities is available through YTC Operations Center, phone (509) 577-3280.

8. AVAILABILITY OF WATER FOR CONSTRUCTION

8.1 Water is available at the sources listed in Section 01010 Summary of Work.

8.2 All use of wells, hydrants, and fill points shall be coordinated in advance through the Quality Assurance Representative with Yakima Training Center Representatives.

9. PERENNIAL CREEKS

None of the drainages in this project are perennial; some may contain runoff due to a recent storm.

10. BORROW SITES

Borrow sites are as indicated in Section 01010 Summary of Work. Prior to starting pit operations a site plan shall be submitted through the QA Representative for approval by Yakima Training Center Public Works prior to mobilization. The review of the plan is to ensure that the long term development of the borrow pits is consistent with Yakima Training Center environmental standards. After completion of pit operations, a final inspection shall be held prior to demobilization to ensure proper restoration. Coordinate the final inspection through the QA Representative with Yakima Training Center Public Works.

11. IDENTIFICATION

All Contractor-owned and privately owned vehicles shall be marked with the Contract's logo, and shall be registered at YTC Operations Center, phone (509) 577-3280. See paragraph IDENTIFICATION OF EMPLOYEES AND MIILITARY REGULATIONS in SECTION 01001 for specific requirements.

12. ENVIRONMENTAL PROTECTION:

In addition to the requirements of Section 01410, the following requirements apply to this task order:

12.1 PROTECTION OF ENVIRONMENTAL RESOURCES

The environmental resources within the project boundaries and those affected outside the limits of permanent work under this contract shall be protected during the entire period of this contract. The Contractor shall confine his activities to area defined by the drawings and specifications. Environmental protection shall be as stated in the following subparagraphs:

12.1.1 Protection of Drainage's Streambeds, and Water Courses

Care shall be taken to avoid any sediment from entering steam channels during construction of fords, roads, and culverts. All excavation spoils will be hauled to designated native material disposal sites within ten miles of the site. All stockpiles will have silt fences properly installed (follow manufactures instructions) on the downhill side from construction sites when the stockpiles contain loose fines. No loose fines will remain on the road surface or bank face at the time of project completion. Disturbance of the stream channel will be limited to that necessary to install the culverts and ford within any limitations found elsewhere in this contract. Affected streambed areas outside the culvert or ford structure will be restored to previous condition. Within 48 hours after completion of each culvert structure the Contracting Officer will be notified.

12.1.2 Site Restoration

All debris (excess materials) will be removed from the field site and disposed of at a site approved by the Contracting Officer, not more than 10 miles away from the construction area. Site repairs by the Contractor after completion of each element will include grading and recontouring to a condition which simulates the surrounding terrain.

Siber stake areas are not to be entered with wheeled or tracked vehicles. Foot travel is permitted. Contractor shall be responsible for all restoration required should equipment damage or other unauthorized impact to siber staked areas occur as a result of Contractor action.

12.1.3 Fire Hazard

Cloths, cotton waste, and other combustible materials that might constitute a fire hazard shall be placed in closed metal containers and placed outside or destroyed at the end of each day. The contractor is cautioned that wild land fires can start quickly and spread rapidly. For all welding operations a burn permit is required and obtained through the Yakima Training Center Fire Department (509) 577-3002 located at Building 346.

12.1.4 Permits

Note that other required permits include air quality for rock crushing operations and may be subject to Yakima County Clean Air Authority for work in Yakima County and Washington State Department of Ecology for work in Kittitas County.

12.2 CULTURAL RESOURCE PROTECTION

12.2.1 Archeological Finds

Several known archaeological sites have been identified by the Government. These sites are shown on the site plans of the contract drawings. The disposition of these known sites shall occur under separate contract. The Contractor shall coordinate construction activity in the areas of the known sites with the Contracting Officer at least 5 working days prior to initiating the work, and avoid areas as shown on the contract drawings. Unexpected archaeological finds may occur during construction. The Contractor can generally expect two types of archaeological finds: prehistoric occupation and human skeletal remains.

12.2.2 Prehistoric Occupation Debris

If, during construction activities the Contractor observes evidence of prehistoric occupation such as bone fragments, charcoal, fire-modified rock and cryptocrystalline flaking debris, in a place not previously identified, the Contractor shall cease work in the area of the find, leaving all objects in place. An on-site inspection of the site by Government cultural resource specialists will occur within 48 hours of receiving notice to determine their significance and what, if any special disposition of the find should be made.

12.2.3 Human Skeletal Remains

If, during construction activities, the Contractor observes human skeletal remains, the Contractor shall notify the Contracting officer within 4 hours of the find. The Contractor shall cease all activities in the area of the discovery. Construction activity in the area may resume after 30 days from the notification to the Contracting Officer. Disposition shall take place within 30 days of the find, in conformity with Native Graves Protection and Repatriation Act.

13. FIRE PROTECTION

In addition to the requirements of Section 01500, any fire within grass or shrubs shall be immediately reported to YTC Operations Center (509) 577-3280, Yakima Training Center.

13. CONTRACT DRAWINGS, MAPS, AND SPECIFICATIONS

(a) The Government –

(1) Will provide the Contractor, without charge, one set of contract drawings and one set of specifications in electronic format on a compact disk. The Government will not give the Contractor any hard copy paper drawings or specifications for any contract resulting from this solicitation.

(b) The Contractor shall –

(1) check all drawings furnished immediately upon receipt;

(2) Compare all drawings and verify the figures before laying out the work;

(3) Promptly notify the Contracting Officer of any discrepancies;
and

(4) Be responsible for any errors which might have been avoided by complying with this paragraph (b).

(c) Large scale drawings shall, in general, govern small scale drawings. Figures marked on drawings shall, in general, be followed in preference to scale measurements.

(d) Omissions from the drawing or specifications or the misdescription of details of work which are manifestly necessary to carry out the intent of the drawings and specifications, or which are customarily performed, shall not relieve the Contractor from performing such omitted or misdescribed details of the work, but shall be performed as if fully and correctly set forth and described in the drawings and specifications.

(e) The work shall conform to the specifications and the contract drawings identified in the index of drawings attached at the end of this section.

INDEX OF DRAWINGS

ROAD UPGRADE MITIGATION PHASE 5A – MODIFICATION,
YAKIMA TRAINING CENTER, WA
PN 44800

SHEET NUMBER	PLATE NUMBER	TITLE	REVISION NUMBER	DATE
1	G-M01	Cover Sheet and Drawing Index		01FEB01
2	C-M01	Project Site Map - 1		01FEB01
3	C-M02	Project Site Map – 2		01FEB01
4	C-M03	Project Site Map – 3		01FEB01
5	C-M04	Project Site Map - 4		01FEB01
6	C-M05	Civil Details - 1		01FEB01

END OF SECTION

SECTION 02221

EXCAVATION, TRENCHING, AND BACKFILLING FOR UTILITIES SYSTEMS

PART I GENERAL

1.1 SUMMARY (Not Applicable)

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

U.S ARMY CORPS OF ENGINEERS MANUAL

EM 385-1-1 Safety and Health Requirements

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 422 (1963, R 1998) Particle-Size Analysis of Soils

ASTM D 1556 (1990; R 1996) Density of Soil in Place by the Sand-Cone Method

ASTM D 1557 (1998) Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lb./cu. ft.)

ASTM D 2167 (1994) Density and Unit Weight of Soil in Place by the Rubber Balloon Method

ASTM D 2217 (1985, R 1993) Wet Preparation of Soil Samples for Particle-Size Analysis and Determination of Soil Constants

ASTM D 2487 (1993) Classification of Soils for Engineering Purposes (Unified Soil Classification System)

ASTM D 3740 (1996) Minimum Requirements for Evaluation of Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction

ASTM D 4318 (1995a) Liquid Limit, Plastic Limit, and Plasticity Index of Soils

1.3 DEFINITIONS

1.3.1 Degree of Compaction

Degree of compaction shall be expressed as a percentage of the maximum density obtained by the test procedure presented in ASTM D 1557. This will be abbreviated herein as percent of laboratory maximum density.

PART 2 PRODUCTS

2 1 MATERIALS

2.1.1 Satisfactory Materials

Satisfactory materials shall consist of any material classified by ASTM D 2487 as GW, GP, SP, and SW. Materials classified as SP-SM, GP-GM, GM or GC are also satisfactory provided that they contain moisture content suitable for the intended use.

2.1.2 Unsatisfactory Materials

Unsatisfactory materials shall be materials that do not comply with the requirements for satisfactory materials. Unsatisfactory materials include but are not limited to those materials containing roots and other organic matter, trash, debris, frozen materials and stones larger than 3 inches, and materials classified in ASTM D 2487, as PT, OH, and OL. Unsatisfactory materials also include man-made fills, refuse, or backfills from previous construction.

2.1.3 Cohesionless and Cohesive Materials

Cobesionless materials shall include materials classified in ASTM D 2487 as GW, GP, SW, and SP. Cohesive materials include materials classified as GC, SC, ML, CL, MH, and CH. Materials classified as GM and SM will be identified as cohesionless only when the fines are nonplastic. Liquid limit and plasticity index shall be determined in accordance with ASTM D 4318 using ASTM D 2217, Procedure B.

2.14 Unyielding Material

Unyielding material shall consist of rock and gravelly soils with stones greater than 3 inches in any dimension or as defined by the pipe manufacturer, whichever is smaller.

2.1.5 Unstable Material

Unstable material shall consist of materials too wet to properly support the utility pipe, conduit, or appurtenant structure.

2.1.6 Select Granular Material

Select granular material shall consist of well-graded sand, gravel, crushed gravel, crushed stone or crushed slag composed of hard, tough and durable particles, and shall contain not more than 10 percent by weight of material passing a No. 200 mesh sieve and no less than 95 percent by weight passing the 1-inch sieve. The maximum allowable aggregate size shall be 3 inches, or the maximum size recommended by the pipe manufacturer, whichever is smaller.

2.1.7 Initial Backfill Material

Initial backfill shall consist of select granular material or satisfactory materials free from rocks 2 inches or larger in any dimension or free from rocks of such size as recommended by the pipe manufacturer, whichever is smaller. When the pipe is coated or wrapped for corrosion protection, the initial backfill material shall be free of stones larger than 1-inch in any dimension or as recommended by the pipe manufacturer, whichever is smaller.

2.l.8 Bedding Material

Bedding shall be of the type and thickness shown. Bedding shall be clean, sand-gravel mixture free from organic matter and conforming to the following gradation when tested in accordance with ASTM D 422.

U.S. Standard	Percent Passing Sieve Size
1-inch	100
No. 4	25-80
No. 200	0-10

PART 3 EXECUTION

3.1 EXCAVATION

Excavation of every description and of whatever substances encountered shall be performed to the lines and grades indicated. Excavations shall be unclassified. During excavation, material satisfactory for backfilling shall be stockpiled in an orderly manner at a distance from the banks of the trench equal to ½ the depth of the excavation, but in no instance closer than 2 feet. Excavated material shall not be stockpiled within any drainage or stream channel nor within 50 feet of any such feature. Excavated material which contains greater than 30% fines, and which is to be stored for more than one week, shall have a filter fabric fence constructed around the down slope side. Excavated material not required or not satisfactory for backfill shall be removed from the site and shall be disposed of as directed by the Contracting Officer. Any excess satisfactory excavated materials shall not be mixed with unsatisfactory materials. Unsatisfactory materials shall not cover available suitable materials. Grading shall be done as may be necessary to prevent surface water from flowing into the excavation, and any water accumulating therein shall be removed to maintain the stability of the bottom and sides of the excavation. Unauthorized over excavation shall be backfilled in accordance with paragraph BACKFILLING at no additional cost to the Government.

3.1.1 Trench Excavation.

The trench shall be excavated as recommended by the manufacturer of the pipe to be installed. Trench walls below the top of the pipe shall be sloped or made vertical, and of such width as recommended in the manufacturer's instruction manual. Where no manufacturer's installation manual is available, trench walls shall be excavated to a stable angle of repose as required to properly complete the work. Trench excavations shall adhere to requirements prescribed in EM 3S5-1-1, Safety and Health Requirements Manual. Special attention shall be given to slopes which may be adversely affected by weather or moisture content. The trench width below the top of pipe shall not exceed 36 inches plus pipe outside diameter. Where recommended trench widths are exceeded, redesign, stronger pipe, or special installation procedures shall be utilized by the Contractor. The cost of redesign, stronger pipe, or special installation procedures shall be borne by the Contractor without any additional cost to the Government.

3.1.1.1 Bottom Preparation

The bottoms of trenches shall be accurately graded to provide uniform bearing and support for the bottom quadrant of each section of the pipe. Bell holes shall be excavated to the necessary size at each joint or coupling to eliminate point bearing.

3.1.1.2 Removal of Unyielding Material

Where unyielding material is encountered in the bottom of the trench, such material shall be removed 4 inches below the required grade and replaced with suitable materials as provided in paragraph BACKFILLING.

3.1.1.3 Removal of Unstable Material

Where unstable material is encountered in the bottom of the trench, such material shall be removed to the depth directed and replaced to the proper grade with select granular material as provided in paragraph BACKFILLING. When removal of unstable material is required due to the fault or neglect of the Contractor in his performance of the work, the resulting material shall be excavated and replaced by the Contractor without additional cost to the Government.

3.1.1.4 Jacking, Boring, and Tunneling

Unless otherwise indicated, excavation shall be by open cut except that sections of a trench may be jacked, bored, or tunneled if, in the opinion of the Contracting Officer, the pipe, cable, or duct can be safely and properly installed and backfill can be properly compacted in such sections.

3.1.1.5 Stockpiles

Stockpiles of satisfactory material shall be placed and graded as specified. Stockpiles shall be kept in a neat and well drained condition, giving due consideration to drainage at all times. The ground surface at stockpile locations shall be cleared, grubbed, and sealed by rubber-tired equipment, excavated satisfactory and unsatisfactory materials shall be separately stockpiled. Stockpiles of satisfactory materials shall be protected from contamination which may destroy the quality and fitness of the stockpiled material. If the Contractor falls to protect the stockpiles, and any material becomes unsatisfactory, such material shall be removed and replaced with satisfactory material from approved sources at no additional cost to the Government. Locations of stockpiles of satisfactory materials shall be subject to prior approval of the Contracting Officer and shall be placed at least 100 feet from any drainage or stream channel. The Contractor shall take care in stockpile areas to avoid the spread of plant species such as knapweed, whitetop (hoary cress) arid thistles (Scotch, Russian, Canadian, Bull).

3.2 BACKFILLING

Backfill material shall consist of satisfactory material, select granular material, or initial backfill material as required. Backfill materials shall be obtained from borrow areas as required. Satisfactory materials from excavations shall be used to the maximum extent possible. Borrow areas shall be in accordance with Section 01005 SITE SPECFIC SUPPLEMENTARY REQUIREMENTS or as specified. Backfill shall be placed in layers not exceeding 6 inches loose thickness for compaction by hand operated machine compactors, and 8 inches loose thickness for other than hand operated machines, unless otherwise specified. Each layer shall be compacted to at least 95 percent maximum density for cohesionless soils and 90 percent maximum density for cohesive soils, unless otherwise specified. The backfill shall be

brought up evenly on both sides of the pipe for the hill length Care shall be taken to ensure thorough compaction of the fill under the haunches of the pipe.

3.2.1 Trench Backfill

Trenches shall be backfilled to the grade shown. The trench shall be backfilled to 2 feet above the top of pipe prior to performing the required pressure tests. The joints and couplings shall be left uncovered during the pressure test. The line shall not be backfilled until all specified tests are performed.

3.2.1.1 Replacement of Unyielding Material.

Unyielding material removed from the bottom of the trench shall be replaced with select granular material or initial backfill material.

3.2.1.2 Replacement of Unstable Material.

Unstable material removed from the bottom of the trench or excavation shall be replaced with select granular material picked in layers not exceeding 6 inches loose thickness.

3.2.l.3 Bedding and Initial Backfill.

Bedding shall be of the type and thickness shown. Initial backfill material shall be placed and compacted with approved tampers to a height of at least one foot above the utility pipe or conduit. The backfill shall be brought up evenly on both sides of the pipe for the full length of the pipe. Care shall be taken to ensure thorough compaction of the fill under the haunches of the pipe. Backfill material in this portion of the trench shall consist of satisfactory material at a moisture content that will facilitate compaction, free from stones of such size as recommended by the pipe manufacturer, or larger than 2 inches in any dimension, whichever is smaller, except that where the pipe is coated or wrapped for protection against corrosion, the backfill material shall be free of stones larger than 3 inch in any dimension or as recommended by the pipe manufacturer, whichever is smaller.

3.2.1.4 Final Backfill

The remainder of the trench, except for special materials for roadways shall be backfilled with satisfactory material. Backfill material shall be placed and compacted up to the elevation at which the requirements in SECTION 02230, EXCAVATION, EMBANKMENT AND PREPERATION OF SUBGRADE FOR ROADWAYS control. Water flooding or jetting methods of compaction will not be permitted.

3.3 TESTING

Testing shall be the responsibility of the Contractor and shall be performed at no additional cost to the Government. Number or tests shall be in accordance with SECTION 01451, CONTRACTOR QUALITY CONTROL.

3.3.1 Testing Facilities.

Tests shall be performed by a Corps of Engineers approved commercial testing laboratory. Approval of testing facilities and personnel shall be based on compliance with ASTM D 3740 and a Corps of Engineers Certified Lab. For more information about test facilities, see Section 01451, Paragraph 3.7.

3.3.2 Testing of Backfill Materials.

Laboratory tests for moisture-density relations shall be determined in accordance with ASYM D 1557. A mechanical tamper maybe used, provided the results are correlated with those obtained by the referenced hand tamper or ASTM D 1557. Field in-place density shall be determined in accordance with ASTM D 1556 or ASTM D 2167. Trenches improperly compacted shall be reopened to the depth directed, then refilled and compacted to the density specified at no additional cost to the Government.

END OF SECTION

SECTION 02230

EXCAVATION, EMBANKMENT, AND PREPARATION OF SUEGRADE FOR ROADWAYS

PART I GENERAL

1.1 SUMMARY (Not Applicable)

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 136	(1996a) Sieve Analysis of Fine and Coarse Aggregates
ASTM D 422	(1963; R 1998) Particle-Size Analysis of Soils
ASTM D 1140	(1997) Amount of Material in Soils Finer than the No.200 (75-um) Sieve
ASTM D 1156	(1990;R 1996) Density of Soil in Place by the Sand-Cane Method
ASTM D 1557	(1998) Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lb./cu. Ft.)
ASTM D 2167	(1994) Density and Unit Weight of Soil in Place by the Rubber Balloon Method
ASTM D 2217	(1985) Wet Preparation of Soil Samples for Particle-Size Analysis and Determination of Soil Particles
ASTM D 2487	(1993) Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 3740	(1996) Evaluation of Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
ASTM D 4318	(1995a) Liquid Limit, Plastic Limit; and Plasticity Index of Soils

1.3 DEFINITIONS

1.3.1 Satisfactory Materials

Satisfactory Materials: Satisfactory materials shall comprise any materials classified by ASTM D 2487 as ML GW, GP, SP, and SW Materials classified as SP-SM, GP-GM, GM, or GC are also satisfactory provided they contain moisture contents suitable for the intended use and are flee of organic matter.

l.3.2 Unsatisfactory Materials

Unsatisfactory materials shall comprise any materials classified by ASTM D 2487 as PT, OH, OL, and any materials containing organic matter or having moisture contents unsuitable for the intended use. Unsatisfactory materials also include man-made fills, refuse, vegetation, and all materials containing excessive organic matter or having moisture content; which are not suitable for the intended use.

1.3.3 Cohesionless and Cohesive Materials

Cohesionless materials include materials classified in ASTM D 2487 as GW, GP, SW, and SP. Cohesive materials include materials classified as GC, SC, ML, CL, MH, and CH. Materials classified as GM and SM will be identified as cohesionless only when the fines are nonplastic. Testing required for classifying materials shall be in accordance with ASTM C 136, ASTM D 422, ASTM D 1140, ASTM D 2217 Procedure B, and ASTM D 4318.

1.34 Degree of Compaction

Degree of compaction is a percentage of the maximum density obtained by the test procedure presented in ASTM D 1557. This will be abbreviated herein as percent of laboratory maximum density.

1.4 SUBMITTALS

Government approval is required for submittals with a "GA' designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01300 SUBMITTALS.

Statements

Earthwork, GA

Procedure and location for disposal of unused satisfactory material. Proposed source of borrow material.

Reports

Testing; FIO.

Within 24 hours of conclusion of physical tests, 2 copies of test results, including calibration curves and results of calibration tests.

Certificates

Testing; FIO.

Qualifications of the commercial testing laboratory or Contractor's testing facilities.

Records

Earthwork; FIO.

Notification of encountering rock in the project. Advance notice on the opening of excavation or borrow areas.

1.5 EQUIPMENT

The equipment and tools used in The performance of the work covered in this Section shall be adequate and have the capacity of producing the required compaction, meeting grade controls, thickness control, and smoothness requirements as set forth herein.

1.6 CLASSIFICATION OF EXCAVATION

Excavated materials shall not be classified.

1.7 UTILIZATION OF EXCAVATED MATERIALS

All unsatisfactory materials removed from excavations shall be spread evenly along the downhill side of the road but not within 50 feet of an existing drainage or stream bed or siber-staked area. Satisfactory material removed from excavations shall be used, in so far as practicable, in the construction of fills, embankments, subgrades, shoulders, bedding (as backfill), and for similar purposes. Coarse rock from excavations shall be stockpiled and used for constructing slopes or embankments adjacent to streams, or sides and bottoms of channels and for protecting against erosion. No excavated material shall be disposed of in such a manner as to obstruct the flow of any stream, endanger a partly finished structure, impair the efficiency or appearance of any structure, or be detrimental to the completed work in any way.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 EXCAVATION

The Contractor shall perform excavation of every type of material encountered within the limits of the project to the lines, grades, and elevations indicated and as specified herein. Grading shall be in conformity with the typical sections shown and the tolerances specified in Paragraph FINISHING. Satisfactory excavated materials shall be transported to and placed in fill or embankment within the limits of the work. Unsatisfactory materials encountered within the limits of the work shall be excavated below grade and replaced with satisfactory materials as directed by The Contracting Officer. Surplus satisfactory excavated material not required for fill or embankment shall be spread evenly along the downhill side of the road, but not within 50 feet of an existing drainage or stream bed or siber-staked area. During construction, excavation and fill shall be performed in a manner and sequence that will provide proper drainage at all times. Material required for fill or embankment in excess of that produced by excavation within the grading limits shall be excavated from the borrow areas indicated or from other approved areas selected by the Contractor as specified herein. Blasting will be permitted for borrow site development only. Assume any other rock encountered may be removed with a D-8 or D-9 dozer, with ripper.

3.1.1 Water Turn-Outs

Excavation of water turn-outs shall be accomplished as required to adequately divert water out of drainage ditches. All turn-outs will be installed at least 50 feet away from any naturally occurring drainage. The spacing of turn-outs will be as indicated along those portions of roadway where they are required. Location of water turn-outs shall be dictated by the adjacent topography. Excavation shall be accomplished as shown. Care shall be taken not to excavate water turn-outs below grades shown. Excessive open excavation shall be backfilled with satisfactory material, thoroughly compacted, or with suitable stone or cobble to grades shown at no additional cost to the Government. Material excavated

shall be disposed of as shown or as directed, except that in no case shall material be deposited adjacent to the water turn-out area unless directed by the Contracting Officer. The Contractor shall maintain all excavations free from detrimental quantities of leaves, brush, sticks, trash, and other debris until final acceptance of the work. The excavations shall be made with a minimum impact to the adjacent and surrounding area. Areas disturbed by The Contractor's operations shall be graded to blend-in with the surrounding topography.

3.1.2 Ditches, Gutters, and Channel Changes

Excavation of ditches, gutters, and channel changes shall be accomplished by cutting accurately to the cross sections, grades, and elevations shown. Care shall be taken not to excavate ditches and gutters below grades shown. Excessive open ditch or gutter excavation shall be backfilled with satisfactory material, thoroughly compacted, or with suitable stone or cobble to grades shown at no additional cost to the Government. Material excavated shall be disposed of as shown or as directed, except that in no case shall material be deposited less than 4 feet from the edge of a ditch. The Contractor shall maintain all excavations free from detrimental quantities of leaves, brush, sticks, trash, and other debris until final acceptance of the work.

3.1.3 Drainage Fords

Excavation of drainage fords shall be accomplished by cutting accurately to the cross sections, grades, and elevations shown. Care shall be taken not to excavate drainage fords below grades shown. Excessive open drainage ford excavation shall be backfilled with select gravel fill material, thoroughly compacted, or with suitable stone or cobble to grades shown at no additional cost to the Government. Where excavation is required to meet ten percent (10%) max. grade allowance, approach road leading up to ford shall be
regraded to provide smooth, even transition from road surface to ford. Material excavated shall be disposed of as previously specified. The Contractor shall maintain all excavations free from detrimental quantities of leaves, brush, sticks, trash, and other debris until final acceptance of the work.

3.1.4 Road Sections

The intent of excavations is to widen existing scratch grade roads and provide adequate drainage. Any clearing and grubbing necessary thereto including the removal and disposal of cattle guards and 4 or 5-strand barbed wire fencing on wood and steel posts shall be considered related operations to the excavation and grading and shall be performed by the Contractor at no additional cost to the Government. Additional excavation or work completed which is at variance with The Contracting Officer's instructions shall be done at the Contractor's expense.

3.2 SELECTION OF BORROW MATEIAAL

Borrow material shall be selected to meet the requirements and conditions of the particular fill or embankment for which it is to be used. Borrow material shall be obtained from the borrow areas shown or from an approved private source. Care shall be taken to select “clean" (weed-free) material visibly devoid of roots and other organic, non-structural material, as determined by the Contracting Officer. Unless otherwise provided in the contract, the Contractor shall obtain from the owner of the borrow source the right to procure materials, pay all royalties and other charges involved, and bear all expense of developing the sources, including rights-of-way for hauling. Borrow material from the approved sources on Government controlled land may be obtained without payment of royalties. Unless specifically provided, no borrow shall be obtained within the limits of the project site without prior written approval. Necessary clearing, grubbing, and satisfactory drainage of borrow pits and the disposal of debris thereon shall be

considered related operations to the borrow excavation and shall be performed by the Contractor at no additional cost to the Government.

3.3 SUBGRADE PREPARATION

3.3.1 Construction

Subgrade shall be shaped to line, grade, and cross section, and compacted as specified. This operation shall include plowing, disking, and any moistening or aerating required to obtain specified compaction. Soft or otherwise unsatisfactory material shall be removed and replaced with satisfactory excavated material or other approved material as directed. Rock encountered in the cut section shall be excavated to a depth of 6 inches below finished grade for the subgrade or the adjacent area built-up such that a minimum of 12 inches cover is provided measured from the top of rock to the top of the road. Low areas resulting from removal of unsatisfactory material or excavation of rock shall be brought up to required grade with pit run rock materials, and the entire subgrade shall be shaped to line, grade, and cross section and compacted as specified. All intersections shall have a minimum radius of 30 feet. All existing roads along the improved road shall be transitioned onto the improved road with radius and 10’ aprons.

3.3.2 Compaction

The six inches of material immediately below subgrade shall be compacted to 90% maximum laboratory density. Compaction shall be accomplished by sheepsfoot roller, pneumatic-tired rollers, smooth-drum vibratory rollers or other approved equipment well suited to the soil being compacted Generally, sheepsfoot rollers are best suited for compacting cohesive material while smooth-drum vibratory rollers are best suited for Compacting cohesionless materials.

3.4 FINISHING

The surface of all excavations, embankments, and subgrades shall be finished to a smooth and compact surface in accordance with the lines, grades, and cross sections or elevations shown. Gutters and ditches shall be finished in a manner that will result in effective drainage.

3.5 TESTING

Testing shall be the responsibility of the Contractor and shall be performed at no additional cost to the Government. Number of tests shall be in accordance with Section 01451: CONTRACTOR QUALITY CONTROL.

3.5.1 Testing Facilities

Testing shall be performed by an approved commercial testing laboratory or may be tested by the Contractor subject to approval. Testing facilities and personnel shall meet requirements of ASTM D 3740 and shall be in accordance with Section 01451: CONTRACTOR QUALITY CONTROL. If the Contractor elects to establish testing facilities, no work requiring testing will be permitted until the Contractors facilities have been inspected and approved by the Contracting Officer. Costs incurred for inspections shall be at the expense of the contractor.

3.5.2 Optimum Moisture and Laboratory Maximum Density

Moisture-density relations shall be determined in accordance with ASTM D 1557.

3.6 SUGRADE AND EMBANKMENT PROTECTION

During construction, embankments and excavations shall be kept shaped and drained. Ditches and drains along subgrade shall be maintained in such a manner as to drain effectively at all times. The finished subgrade shall not be disturbed by traffic or other operation and shall be protected and maintained by the Contractor in a satisfactory condition until embankment or road materials are placed. The storage or stockpiling of materials on the finished subgrade will not be permitted. No road materials shall be laid until the subgrade has been checked and approved, and in no case shall road materials be placed on a muddy, spongy, frozen or previously frozen subgrade.

END OF SECTION

SECTION 02270

GEOCELLULAR CONFINEMENT SYSTEM

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 792	(1998) Density and Specific Gravity (Relative Density) of Plastics by Displacement
ASTM D 1693	(1998) Environmental Stress-Cracking of Ethylene Plastics
ASTM D 3767	(1996) Practice for Rubber Measurement of Dimensions

1.2 SUBMITTALS

Government approval is required for submittals with "GA" designation Submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01300 SUBMITTALS:

Data; FIO

Data shall consist of manufacturers descriptive and technical literature for geocellular confinement system.

Instructions, FI0

Installation Procedures

Where installation procedures or any part thereof are required to be in accordance with the recommendations of the manufacturer of the material being installed, printed copies of these recommendations shall be furnished to the Contracting Officer prior to installation.

1.3 DELIVERY, STORAGE, AND HANDLING

1.3.1 Delivery and Storage

Materials delivered to site shall be inspected for damage, unloaded, and stored with a minimum of handling. Materials shall not be stored directly on the ground and should be covered by a tarp if exposed to direct sunlight for a period greater than three months.

1.3.2 Handling

Materials shall be handled in such a manner as to ensure delivery to the ford site in sound, undamaged condition.

PART 2 PRODUCTS

2.1 GEOCELLULAR CONFINEMENT SYSTEM

The geocellular confinement system is a series of interconnected geocell sections. Each geocell section is an assembly of polyethylene sheet strips connected in a series of offset, full depth, seams aligned perpendicular to the longitudinal axis of the strips. When expanded the interconnected strips form the walls of a flexible cellular confinement structure into which specified infill materials are placed.

2.l.l Provide standard geocell sections manufactured specifically for this type of application. Sections shall be formed, polyethylene with 1.5 percent carbon black conforming to the following:

a. Minimum section size shall be 14 feet long by 8 feet wide when fully expanded and each section shall have holes predrilled to allow for the installation of tendons and anchor pins as shown on the plans.

b. Section depth shall be 8 inches.

c. Cell openings shall be 8 inches by 9.6 inches or as approved by the Contracting Officer.

d. Minimum section weight shall be 75 lbs.

e. Geocell material shall be polyethylene with a minimum tensile strength of 2,000 psi when loaded at a rate of 0.10 in./min. as tested in accordance with ASTM D 1693.

f. Seams which interconnect cells shall have a minimum strength of 55 lbs per inch of cell depth.

g. Minimum cell wall thickness shall be 1.25 millimeters (50 mil)±5% when tested in accordance with ASTM D 3767.

h. Geocell material shall be stabilized to resist ultraviolet light and chemical degradation. If materials joining geocell walls differ from the geocell material, joining material shall have the same or better resistance to chemical and ultraviolet light degradation than that of the geocell material.

i. Geocell material shall have a specific gravity ranging between 0.935 and 0.965 when tested in accordance with ASTM D 792.

2.2 ANCHORS

Geocell section anchors shall be standard J-pins or as approved by the Contracting Officer. Standard J-pins shall be either No. 3 or No. 4 construction rebar a minimum of 18 inches in length.

2.3 TENDONS

Tendons shall be made of high strength, creep resistant cord or rope, or other material approved by the Contracting Officer Tendons shall be flexible enough to be secured with a nons1ip knot and shall be

resistant to extreme changes in temperature and humidity. Tendons shall have a minimum breaking strength of 1,600 pounds.

2.4 FASTENERS

Fastener for connecting adjacent geocell sections shall be a pneumatic type stapler. Staples shall be ½ inch.

2.5 INFILL MATERIAL

Geocellular confinement system infill material shall be Wearing Course as defined in paragraph 2.2 of Section 02506: AGGREGATE SURFACE WEARING COURSE.

2.6 GEOTEXTILE FABRIC

Geotextile fabric shall conform to Section 02272: GEOTEXITLE.

2.7 CORNER POSTS

Corner posts shall be a commercial standard steel channel T-section, painted, equipped with anchor bolts. They shall be not less than 5 feet-6 inches long and weigh a minimum of 125 pounds (standard heavy weight posts).

PART 3 EXECUTION

3.l INSTALLTION

3.l.1 Subgrade Preparation

Excavation and backfilling for the geocellular confinement system shall be in accordance with the applicable portions of Section 02230: EXCAVATION, EMBANKMENT, AND PREPERATION OF SUBGRADE FOR ROADWAYS. Minor re-alignment of approach road may be required to insure that no change of direction is accomplished on the geocell panels.

3.1.2 Geotextile Fabric Placement

Geotextile fabric shall be placed in accordance with Section 02272: GEOTEXTILE.

3.1.3 Geocell Section Placement

Geocell sections shall be installed and connected in accordance with the manufacturer's recommendations to the lengths and widths indicated on the plans using approved fasteners, anchors and tendons. Geocell sections when joined shall lie in a straight line with no change of direction or the road upon the ford. All field joints between panels shall he perpendicular to direction of vehicle travel.

3.1.4 Select Gravel Infill Placement

Geocells shall be infilled with wearing course material the full depth of the section with an additional 4 inches above the top of the cell wall. Infill material shall be compacted to a minimum of 95 percent Modified Procter Dry Density. Compaction methods shall be per manufacturer's recommendations or as approved by the Contracting Officer. Care should be taken to ensure that geocell sections are not

damaged during infilling and compaction. Backfill requirements for the geocellular confinement system shall be as shown on the drawings.

3.1.5 Corner Marking

After completion of infill placement, the font comers of each ford shall be marked using corner posts. Posts shall be set so that the anchor plate is completely buried below finish grade.

END OF SECTION

SECTION 02272

GEOTEXTILE

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of the specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 3786	(1987) Hydraulic Bursting Strength of Knitted Goods and Nonwoven Fabrics; Diaphragm Bursting Strength Tester Method
ASTM D 4354	(1996) Sampling of Geosynthetics for Testing
ASTM D 4355	(1992) Deterioration of Geotextiles from Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus)
ASTM D 4491	(1996) Water Permeability of Geotextiles by Permittivity
ASIM D 4533	(1991) Trapezoid Tearing Strength of Geotextiles
ASTM D 4632	(1991) Grab Breaking Load and Elongation of Geotextiles
ASTM D 4751	(1995) Determining Apparent Opening Size of a Geotextile
ASTM D 4759	(1988; R 1996) Determining the Specification Conformance of Geosynthetics
ASTM D 4833	(1988; R 1996) Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products
ASTM D 4873	(1995) Identification, Storage, and Handling of Geotextiles

1.2 SUBMITTALS

Government approval is required for submittals with a "GA" designation. Submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with SECTION 01300 SUBMITTALS:

Instructions

Manufacturing, Sampling, and Testing; FIO.

A minimum of 14 days prior to scheduled use, manufacturer's quality control manual including instructions for storage, handling, installation, and repair.

Certificates

Geotextile; FIO

A minimum of 14 days prior to scheduled use, manufacturer's certificate of compliance stating that the geotextile meets the requirements of this section. This submittal shall include copies of manufacturer's quality control test results. For needle punched geotextiles, the manufacturer shall also certify that the geotextile has been continuously inspected using permanent on-line full-width metal detectors and does not contain any needles which could damage other geosynthetic layers. The certificate of compliance shall be attested to by a person having legal authority to bind the geotextile manufacturing company.

1.4 DELIVERY, STORAGE AND HANDLING

1.4.1 General

Geotextiles shall be labeled, handled, and stored in accordance with ASTM D 4873 and as specified herein. Each roll shall be wrapped in an opaque and waterproof layer of plastic during shipment and storage. The plastic wrapping shall not be removed until deployment. Each roll shall be labeled with the manufacturers name, geotextile type, lot number, roll number, and roll dimensions (length, width, gross weight). Geotextile or plastic wrapping damaged as a result of storage or handling shall be repaired or replaced, as directed. Geotextile shall not be exposed to temperatures in excess of 140 degrees F or less if recommended by the manufacturer.

1.4.2 Handling

Geotextile rolls shall be handled and unloaded with load carrying straps, a forklift with stinger bar, or an axial bar assembly. No hooks, tongs or other sharp instruments shall be used for handling geotextile. Rolls shall not be lifted by use of cables or chains in contact with the geotextile. Geotextile shall not be dragged along the ground.

PART 2 PRODUCTS

2.1 RAW MATERIALS

2.1.1 Geotextile

The geotextile shall be a nonwoven pervious sheet of polymeric material, which is chemically resistant to the conditions it will be exposed to. Fibers used in the manufacture of the geotextile shall consist of long-chain synthetic polymers composed of at least 85 percent by weight polyolefins, polyesters, or polyamides. Stabilizers and/or inhibitors shall be added to the base polymer if necessary to make the filaments resistant to deterioration by ultraviolet light, oxidation, and heat exposure. Reclaimed or recycled fibers or polymer shall not be added to the formulation. Geotextile shall be formed into a network such that the filaments or yarns retain dimensional stability relative to each other, including the selvages. The geotextile physical properties shall equal or exceed the minimum average roll values listed in Table 1. Acceptance of geotextile shall be in accordance with ASTM D 4759. Strength values shown are for the weaker principal direction.

TABLE 1. GEOTEXTILE PHYSICAL PROPERTIES (SI values)

PROPERTY	TEST METHOD	TEST VALUE
Apparent Opening Size	ASTM D 4751	100 < a < 70
Elongation at Break, Percent	ASTM D 4632	Greater Than 50
Permittivity, sec-1	ASTM D 4491	0.3 cm/sec min.
Puncture, lbs.	ASTM D 4833	120 (minimum)
Grab Tensile, lbs	ASTM D 4632	200 (minimum)
Trapezoidal Tear, lbs	ASTM D 4533	75 (minimum)
Burst Strength, psi	ASTM D 3786	350 (minimum)
Ultraviolet Stability (percent strength retained at 500 hours)	ASTM D 4355	70

2.1.2 Thread

Sewn seams shall be constructed with high-strength polyester, nylon, or other approved thread type. Thread shall have equivalent chemical compatibility and ultraviolet light stability as the geotextile and the color shall contrast with the geotextile.

2.2 TESTS, INSPECTIONS, AND VERIFICATIONS

2.2.1 Manufacturing, Sampling, and Testing

Geotextiles and factory seams shall meet the requirements specified in Table 1. Conformance testing shall be performed in accordance with the manufacturer's approved quality control manual. As a minimum, geotextiles shall be randomly sampled for testing in accordance with ASTM D 4354 (Procedure A). Factory seams shall be sampled and tested at the frequency specified in ASTM D 4884.

PART 3 EXECUTION

3.1 SURFACE PREPARATION

The surface underlying tile geotextile shall be smooth and free of ruts or protrusions which could damage the geotextile. Subgrade materials and compaction requirements shall be in accordance with Section 02230.

3.2 INSTALLATION

The Contracting Officer shall be present during handling and installation. Geotextile rolls which are damaged or contain imperfections shall be repaired or replaced as approved. The geotextile shall be laid smooth so as to be free of tensile stresses, folds, and wrinkles. On slopes greater than 5 horizontal on 1 vertical, the geotextile shall be laid with the machine direction of the fabric parallel to the slope direction.

3.3 PROTECTION

The geotextile shall be protected during installation from clogging, tears, and other damage. Damaged geotextile shall be repaired or replaced as directed. Adequate ballast (e.g. sand bags) shall be used to prevent uplift by wind. Staples or pins shall not be used to hold the geotextile in place. The geotextile shall not be left uncovered for more than 1 day during installation. Overlying materials shall be deployed such that the geotextile is not shifted, damaged, or tensioned. Cover soil placed from a bucket shall be dropped from a height no greater than 3 feet. No portion of the geotextile shall remain uncovered upon completion of backfilling.

3.4 REPAIRS

Geotextile damaged during installation shall be repaired by placing a patch of the same type of geotextile which extends a minimum of 12 inches beyond the edge of the damage or defect. Patches shall be continuously fastened using a sewn seam or other approved method. The machine direction of the patch shall be aligned with the machine direction of the geotextile being repaired. Geotextile which cannot be repaired shall be replaced.

END OF SECTION

SECTION 02506

AGGREGATE SURFACE WEARING COURSE

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part or this specification to the extent referenced. The publications are referenced to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 29	(1997) Bulk Density “Unit Weight” and Voids in Aggregate
ASTM C 117	(1995) Materials Finer Than 75-um (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C 127	(1988.R 1993) Specific Gravity and Absorption of Coarse Aggregate
ASTM C 136	(1996; Rev. A) Sieve Analysis of Fine and Coarse Aggregates
ASTM D 75	(1987, R 1992) Sampling Aggregates
ASTM D 422	(1963, R 1990) Particle Size Analysis of Soils
ASTM E 11	(1995) Specification for Wire-Cloth Sieves for Testing Purposes

1.2 SUBMITTALS

Government approval is required for submittals with a "GA” designation; submittals having an "FIO” designation are for information only. The following shall be submitted in accordance with Section 01300 SUBMITTALS:

Reports

Test Report; FIO

Copies of field test results shall be submitted within 24 hours after the tests are performed.

1.3 DEGREE OF COMPACTION

Degree of compaction is a percentage of the maximum density obtained by the test procedure prescribed in ASTM D 1557, abbreviated herein as percent laboratory maximum

1.4 EQUIPMENT

The equipment and tools used in the performance of the work covered in this section shall be adequate and have the capability of producing the required compaction, meeting grade controls, thickness control, and smoothness requirements as set forth herein.

1.5 WEATHER LIMITATION

The wearing course shall not be constructed when the atmospheric temperature is less than 35 degrees F. The wearing course shall not be constructed on subgrade that is frozen or contains frost If the temperature falls below 35 degrees F, completed areas shall be protected against any detrimental effects of freezing. Areas of completed wearing course that are damaged by freezing, rainfall, or other weather conditions shall be corrected to meet the specified requirements.

1.6 SAMPLING AND TESTING

Sampling and testing shall be the responsibility of the Contractor. Sampling and testing shall be performed by an approved independent commercial testing laboratory. Sampling and testing shall conform to Section 01451 CONTRACTOR QUALITY CONTROL, and as specified herein. Copies of all test results shall be submitted to the Contracting Officer.

1.6.1 Samples

Samples for material gradation tests shall be taken m conformance with ASTM D 75. When deemed necessary, the sampling will be observed by the Contracting Officer.

1.6.2 Tests

The following tests shall be performed in conformance with the applicable standards listed.

1.6.2.1 Sieve Analyses

Before starting work, at least one sample of material shall be tested for gradation and fractured faces in accordance with ASTM C 117, ASTM C 136, and ASTM D 422 on sieves conforming to ASTM E 11.

1.6.3 Approval of Material

The source of the material to be used for producing aggregates shall be selected prior to the time the material will be required in the work. Tentative approval of material will be based on tests of samples for the specific job. Final approval of both the source and the material will be based on tests for gradation performed on samples taken from the completed and compacted wearing course.

PART 2 PRODUCTS

2.1 GENERAL

All aggregate materials to be used in construction shall be obtained from the areas shown. These areas have been approved for development as borrow sites for this project. No other borrow sites will be available to the Contractor on Government controlled land. Material may be obtained from outside sources but shall be subject to testing by an approved commercial testing laboratory, and meet the following requirements;

TEST	REQUIREMENT
Specific Gravity	2.60 Minimum
Maximum Absorption	Not more than 5%
Unit Weight	Not less than 162.5 lbs/ft.
Los Angeles Abrasion	Not more than 25% loss @ 500 cycles
Rapid Freeze-Thaw	Not more than 15% loss @ 100 cycles
Soundness by Wetting and Drying	Not more than 15% loss @ 100 cycles

2.2 WEARING COURSE MATERIAL

Material for the wearing course shall consist of material from the borrow sites indicated with a maximum size of 4 inches and the gradation shown be1ow. Material from outside sources shall have the same gradation subject to approval by the Contracting Officer.

Sieve Size	Percent by Weight Passing
4 inch	100
3 inch	70-100
1-1/2 inch	60-90
3/4 inch	30-70
No. 4	20-50
No. 200	5-10

2.3 ROCK SPALLS

Rock Spalls for general purposes shall be composed of durable fragments of quarried stone between the sizes of 3 inches and 18 inches and meeting the following gradation:

Sieve Size	Percent by Weight Passing
18 Inches	100
12 Inches	85-95
6 Inches	20-30
3 Inches	0-10

Rock spalls at culverts larger than 36” shall be composed of fragments of quarried stone between the sizes of 6 inches and 18 inches and meeting the following gradation”

Sieve Size	Percent by Weight Passing
18 Inches	85-100
12 Inches	30-40
6 Inches	0-15
3 Inches	0

Rock spalls at ford sites shall be composed of fragments of quarried stone between the sizes of 3” and 12” and meeting the following gradation:

Sieve Size	Percent by Weight Passing
12 Inches	100
6 Inches	40-60
3 Inches	0

2.4 RIP RAP

RIPRAP shall be composed of durable fragments of quarried stone between the sizes of 4 inches and 36 inches and meeting the following gradation:

Sieve Size	Percent Passing
36 Inches	100
24 Inches	30
4 Inches	0

PART 3 EXECUTION

3.1 OPERATION OF AGGREGATE SOURCES

Development of the borrow sites indicated shall be the responsibility of the Contractor. This shall include clearing, stripping blasting, excavating and all other activities required to produce the quantity and quality of aggregate materials meeting these specification requirements in the specified time limits. Borrow material from the approved sources on Government-controlled land may be obtained without payment of royalties. No material obtained from the Government controlled sources shall be used for other projects.

3.2 OPENING AND DRAINAGE OF EXCAVATION AND BORROW PITS

Prior to development of quarries on Yakima Training Center, the Contractor shall submit to the Contracting Officer for approval his plan for quarry development and operation, including disposal of quarry waste, quarry cut slopes and construction access roads. For all other quarries, the Contractor shall comply with applicable Federal, state, and local regulations governing quarry development and operations. Contractor shall coordinate all blasting with YTC Range Control through the Contracting Officer. Prior to drilling and blasting in the quarry, overburden shall be removed as completely as can be reasonably effected by excavation equipment and stockpiled. Overburden slopes requiring resloping shall be resloped prior to drilling and blasting. Although a quarry area is provided by the Government, the Contractor may elect to obtain material from another source. In either case, the Contractor shall be responsible for obtaining the quality of all material required by these specifications. The Contractor shall be responsible to determine the yield, lift thickness, production, and development of the quarry. The right is reserved to reject material from certain localized areas, zones, strata, or channels within designated quarry sources when such materials do not meet the requirements of approved rock.

3.2.1 Borrow Pit Restoration and Waste Disposal

Upon completion of quarry operations, the Contractor shall leave the quarry area in a neat condition. Any excess crushed aggregates used for roads shall be stockpiled in quarry area. Stockpiled waste and overburden shall be replaced in the quarry such that quarried faces are reduced to slopes of two horizontal to one vertically provided sufficient quantities of these stockpiled materials exist. All areas disturbed through development or operation of the quarry shall be leveled or covered by stockpiled soil. Final quarry floor shall be sloped to drain.

3.2.2 Borrow Pit Drainage Requirements

Except as otherwise permitted, borrow pits and other excavation areas shall be excavated in such manner as will afford adequate drainage. Overburden and other spoil material shall be transported to designated spoil areas or otherwise disposed of as directed. Borrow pits shall be neatly trimmed and drained after the

excavation is completed. The Contractor shall ensure that excavation of any area, operation of borrow pits, or dumping of spoil material results in minimum detrimental effects on natural environmental conditions.

3.3 STOCKPILING MATERIAL

Prior to stockpiling of material, storage sites shall be cleared and leveled by the Contractor. All materials, including approved material available from excavation and grading, shall be stockpiled in the manner and at locations designated by the Contracting Officer. Aggregates shall be stockpiled on the cleared and leveled areas designated by the Contracting Officer so as to prevent segregation. Materials obtained from different sources shall be stockpiled separately.

3.4 PREPAREON OF UNDERLYING COURSE

Prior to constructing the wearing course, the underlying course shall be cleaned of all foreign substances. At the time of construction of the wearing course, the underlying course shall contain no frozen material. The underlying course shall conform to Section 02230: EXCAVATIEON, EMBANKMENT, AND PREPERATION OF SUBGRADE FOR ROADWAYS. Ruts or soft, yielding spots in the underlying courses, areas having inadequate compaction, and deviations of the surface from the requirements set forth herein shall be corrected by loosening and removing soft or unsatisfactory material and by adding approved material, reshaping to line and grade, and recompacting to specified density requirements. Prior to placement of wearing course, the in-place subgrade shall be graded, smoothed and compacted to 90% maximum laboratory density. In-place subgrade material shall be free of foreign substances.

3.5 PLACING

The running surface of roads shall be spread in layers not more than 6 inches for wearing course in uncompacted thickness. The running surface, including shoulder shall be compacted to 95 percent maximum laboratory density. Rolling shall begin at the outside edge of the surface and proceed to the center, overlapping on successive trips at least one-half the width of the roller. The surface shall be finished in such a manner that the interstices between larger pieces are filled with small pieces, forming a dense, compact mass with a reasonably smooth running surface. In all areas inaccessible to the roller the wearing course shall be compacted with suitable mechanical tampers or as otherwise directed by the Contracting Officer.

3.6 FEILD QUALITY CONTROL

3.6.1 Thickness Control

The completed thickness of the wearing course shall be not less than the thickness indicated. The Contracting Officer may request test holes in order to determine the finished thickness after the specified compaction requirements have been met. If the thickness is found to be deficient, the contractor shall scarify the wearing course to a depth of 3 inches, new material shall be added, and the layer blended and recompacted as specified. In no case will thin layers be added to the top layer of the wearing course to meet grade or thickness requirements.

3.6.2 Smoothness Test

The surface of the top layer shall not deviate more than 3/4 inch when tested with a 10-foot straightedge parallel with and at right angles to the road centerline. Deviations exceeding the specified limits shall be corrected as directed.

3.7 MAINTENANCE

The wearing course shall be maintained in a satisfactory condition until accepted. Maintenance shall include immediate repairs to any defects and shall be repeated as often as necessary to keep the area intact.

END OF SECTION

SECTION 02720

CULVERTS

PART 1 GENERAL

1.1 SUMMARY (Not Applicable)

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced The publications are referred to in the text by basic designation only.

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

AASHTO M 36	(1987I) Corrugated Steel Pipe, Metallic-Coated, for Sewers and Drains
AASHTO M 190	(1988) Bituminous Coated Corrugated Metal Culvert Pipe and Pipe Arches
AASHTO M 243	(1994) Field Applied Coating of Corrugated Metal Structural Plate for Pipe, Pipe-Arches and Arches

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 761/A 761M	(1990) Standard Specification for Corrugated Steel Structural Plate. Zinc-Coated, for Field-Bolted Pipe, Pipe Arches and Arches
ASTMD 1171	(1986) Rubber Deterioration-Surface Ozone Cracking Outdoors or Chamber (Triangular Specimens)
ASIM D 1556	(1982) Density of Soil In-Place by the Sand Cone Method
ASTMD 1557	(1978) Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-Lb. (4.54kg) Rammer and 18-In. (457-mm) Drop
ASTM D 2167	(1994) Density and Unit Weight of Soil in Place by the Rubber Balloon Method

1.3 SUBMITTALS

The following shall be submitted in accordance with Section 01300 SUBMITTALS:

SD-75, Installation Procedures

Where installation procedures or any part thereof are required to be in accordance with the recommendations of the manufacturer of the material being installed, printed copies of these recommendations shall be furnished to the Contracting Officer prior to installation.

SD-76, Certificates of Compliance

Certified copies of test reports demonstrating conformance to applicable pipe specifications shall be delivered to the Contracting Officer before pipe is installed.

1.4 DELIVERY, STORAGE, AND HANDLING

1.4.1 Delivery and Storage

Materials delivered to site shall be inspected for damage, unloaded, and stored with a minimum of handling. Materials shall not be stored directly on the ground. The inside of pipes and fittings shall be kept free of dirt and debris. Gasket materials and plastic materials shall be protected from exposure to the direct sunlight over extended periods.

1.4.2 Handling

Materials shall be handled in such a manner as to ensure delivery to the trench in sound, undamaged condition. Pipe shall be carried to the trench, not dragged.

PART 2 PRODUCTS

2.1 PIPE FOR CULVERTS AND STORM DRAINS

Pipe for culverts and storm drains shall be of the sizes indicated and shall conform to the requirements for the following pertinent types:

2.l.1 Corrugated Steel Pipe

AASHTO M 36, zinc coated Type I and II with helical corrugations. Sheet thickness and corrugation size of pipe shall be as indicated. Shell shall be zinc coated. 24-inch culverts shall be 16 gauge and 36-inch culverts shall be 16 gauge.

2.1.2 Structural Steel Pipe Arch

ASTM A 761/A 761M corrugated steel structural plates, zinc coated, as indicated on the drawings.

2.2 JOINTS

2.2.1 For Corrugated Metal Pipe

Transverse field joints shall be of such design that the successive connection of pipe sections will form a continuous line free of appreciable irregularities in the flow line. In addition, the joints shall meet the general performance requirements described in ASTM A 798. Suitable transverse field joints which satisfy the requirements for one or more of the joint performance categories can be obtained with the following types of connecting bands furnished with suitable band-end fastening devices: corrugated

bands, bands with projections, flat bands, and bands of special design that engage factory reformed ends of corrugated pipe. The space between the pipe and connecting bands shall be kept free from dirt and grit so that corrugations fit snugly. The connecting band, while being tightened, shall be tapped with a soft-bead mallet of wood, rubber or plastic, to take up slack and ensure a tight joint. The annular space between abutting sections of part paved, and fully paved pipe and pipe arch, in sizes 30 inches or larger, shall be filled with a bituminous material after jointing.

2.3 ELBOW SECTIONS

Culvert elbow sections for use in pond outlet construction shall be 90 degrees in bend and constructed in three pans. Gauge and type of metal shall be the same as the adjoining straight section of culvert.

2.4 OUTLET PROTECTION

Rock spalls used for outlet protection shall be composed of durable fragments of quarried the sizes of 3 inches and 18 inches meeting the gradations shown in Section 02506, paragraph 2.3.

Rock spalls shall be placed as indicated on the drawings.

PART 3 EXECTION

3.1 EXCAVATION FOR PIPE CULVERTS

Excavation of trenches and COT appurtenances and backfilling for culverts shall be in accordance with the applicable portions of Section 02221, EXCAVATION, TRENCHING, AND BACKFILLING FOR UTILITIES SYSTEMS and the following requirements.

3.l.1 Trenching

The width of trenches at any point below the top of the pipe shall not exceed 36 inches plus pipe 0.D. to permit satisfactory jointing and thorough tamping of the bedding material under and around the pipe. Sheeting and bracing, where required, shall be placed within the trench width as specified. Care shall be taken not to overexcavate. Where trench widths are exceeded, redesign with a resultant increase in cost of stronger pipe or special installation procedures shall be necessary. Cost of this redesign and increased cost of pipe or installation shall be borne by the Contractor without additional cost to the Government.

3.1.2 Removal of Rock

Rock in either ledge or boulder formation shall be replaced with suitable materials to provide a compacted earth cushion having a thickness between unremoved rock and the pipe of at least 8 inches or 1/2 inch for each foot of fill over the top of the pipe, whichever is greater, but not more than three-fourths the nominal diameter of the pipe. Where bell-and-spigot pipe is used, the cushion shall be maintained under the bell as well as under the straight portion of the pipe. Rock excavation shall be as specified and defined in Section 02221, EXCAVATION, TRENCHING, AND BACKFILLING FOR UTILITIES SYSTEMS.

3.1.3 Removal of Unstable Material

Where wet or otherwise unstable soil incapable of properly supporting the pipe, as determined by the Contracting Officer, is unexpectedly encountered in the bottom of a trench, such material shall be removed to the depth required and replaced to the proper grade with select granular material specified in Section 02221, EXCAVTION, TRENCHING, AND BACKFILLING FOR UTILITIES SYSTEMS, and

compacted as provided in paragraph "BACKFILLING." When removal of unstable material is due to the fault or neglect of the Contractor in his performance of shoring and sheeting, water removal, or other specified requirements, resulting material shall be excavated and replaced.

3.2 BEDDING

The bedding surface for the pipe shall provide a firm foundation of uniform density throughout the entire length of the pipe. When no bedding class is specified or detailed on the drawings, concrete pipe shall be bedded carefully in a soil foundation accurately shaped and rounded to conform to the lowest one-fourth of the outside portion of circular pipe or to the lower curved portion of pipe arch for the entire length of the pipe or pipe arch. When necessary, the bedding shall be tamped. Bell holes and depressions for joints shall be only of such length, depth, and width as required for properly making the particular type of joint. Bedding for corrugated metal pipe and pipe arch shall be in accordance with ASTM A 798. It is not required to shape the bedding to the pipe geometry.

3.3 PLACING PIPE

Each pipe shall be carefully examined before being laid, and defective or damaged pipe shall not be used. Pipelines shall be laid to the grades and alignment indicated. Proper facilities shall be provided for lowering sections of pipe into trenches. Lifting lugs in vertically elongated metal pipe shall be placed in the same vertical plane as the major axis of the pipe. Under no circumstances shall pipe be laid in water, and no pipe shall be laid when trench conditions or weather are unsuitable for such work. Diversion of drainage or dewatering of trenches during construction shall be provided as necessary. All pipe in place shall be inspected before backfilling, and those pipes damaged during placement shall be removed and replaced.

3.3.1 Corrugated Metal Pipe

Laying shall be with the separate sections joined firmly together, with the outside laps of circumferential joints pointing upstream, and with longitudinal laps on the sides. Vertical elongation, where indicated, shall be accomplished by factory elongation. Suitable markings or properly placed lifting lugs shall be provided to ensure placement of factory elongated pipe in a vertical plane.

3.4 BACKFILLING

Backfilling for culverts shall be in accordance with applicable portions of Section 02221, EXCAVATION, TRENCHING, AND BACKFILLING FOR UTILITIES SYSTEMS and Section 02230, EXCAVATION, EMBANKMENT AND PREPARATION OF SUBGRADE FOR ROADWAYS and the following requirements:

3.4.1 Backfilling Pipe in Trenches

After the pipe has been properly bedded, selected material from excavation or borrow, at a moisture content that will facilitate compaction, shall he placed along both sides of pipe in layers not exceeding 6 inches in compacted depth. The backfill shall be brought up evenly on both sides of pipe for the full length of pipe. Care shall be taken to ensure thorough compaction of the fill under the haunches of the pipe. Each layer shall be thoroughly compacted with mechanical tampers or rammers. This method of filling and compacting shall continue until the fill has reached an elevation of at least 24 inches above the top of the pipe. The remainder of the trench shall be backfilled and compacted by spreading and rolling or compacted by mechanical rammers or tampers in layers not exceeding 6 inches close thickness for compaction by hand operated machine compactors, and 6 inches loose thickness for other than hand

operated machines. Tests for density will be made as necessary to ensure conformance to the compaction requirements specified elsewhere in this paragraph. Where it is necessary in the opinion of the Contracting Officer, any sheeting or portions of bracing used shall be left in place and the contract will be adjusted accordingly. Untreated sheeting shall not be left in place beneath structures or pavements.

3.4.2 Backfilling Pipe in Fill Sections

For pipe placed in fill sections, backfill material and the placement and compaction procedures shall be as specified elsewhere in this paragraph. The fill material shall be uniformly spread in layers longitudinally on both sides or the pipe, not exceeding 6 inches in compacted depth, arid shall be compacted by rolling parallel with pipe or by mechanical tamping or ramming. Prior to commencing normal filling operations, the crown width or the fill at a height of 12 inches above the top of the pipe shall extend a distance of not less than twice the outside pipe diameter on each side of the pipe or 12 feet, whichever is less. After the backfill has reached at least 12 inches above the top of the pipe, the remainder of the fill shall be placed and thoroughly compacted in layers not exceeding 6 inches close thickness for compaction by band operated machine compactors, and 8 inches loose thickness for other than hand operated machines.

3.4.3 Movement of Construction Machinery

In compacting by rolling or operating heavy equipment parallel with the pipe, displacement of or injury to the pipe shall be avoided. Movement of construction machinery over a culvert or storm drain at any stage of construction shall be at the Contractor's risk. Any pipe damaged thereby shall be repaired or replaced.

3.4.4 Compaction

3.4.4.1 General

Cohesionless materials include gravels, gravel-sand mixtures, sands, and gravelly sands. Cohesive materials include clayey and silty gravels, gravel-silt mixtures, clayey and silty sands, sand-clay mixtures, clays, silts, and very fine sands. When results of compaction tests for moisture density relations are recorded on graphs, cohesionless soils will show straight lines or reverse-shaped moisture-density curves and cohesive soils will show normal moisture-density curves.

3.4.4.2 Minimum Density

Backfill over and around the pipe and around and adjacent to drainage structures shall be compacted at the approved moisture content to the following applicable minimum density (densities) which will be determined as specified in this paragraph. Under paved roads, streets, and similar-use pavements including adjacent shoulder areas, the density shall be not less than 90 percent of maximum density for cohesive material and 95 percent of maximum density for cohesionless material, up to the elevation where requirements for pavement subgrade materials and compaction shall control. Under unpaved or turfed traffic areas, density shall not be less than 90 percent of maximum density for cohesive material and 95 percent of maximum density for cohesionless material. Under nontraffic areas, density shall be not less than that of the surrounding material.

3.4.5 Determination of Density

Testing shall he the responsibility of the Contractor and performed at no additional cost to the Government. Testing shall be performed by an approved commercial testing laboratory. Tests shall be performed in sufficient number to ensure that specified density is being obtained. Minimum number of tests shall be in accordance with Section 01451, CONTRACTOR QUALITY CONTROL. Laboratory

tests for moisture-density relations shall be made in accordance with ASTM D 1557, Method D, except that mechanical tampers may be used provided the results are correlated with those obtained with the specified hand tamper. Field density tests shall be determined in accordance with ASTM D 2167 or ASTM D 1556. Test results shall be furnished the Contracting Officer.

END OF SECTION

SECTION 02935

DRYLAND SEED APPLICATION

PART I GENERAL

1.1 SUMMARY (Not Applicable)

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AGRICULTURAL MARKETING SERVICE (AMS)

AMS-0l	(Sep. 1977; Amended Oct 29,1986) Federal Seed Act Regulations (Part 20): Certified Seed Regulations

FEDERAL SPECIFICATIONS (FS)

FS JJJ-S-181	(Rev B) Seeds, Agricultural

1.3 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01300 SUBMITTALS:

Data

Manufacturer's Literature; FIO

Manufacturer’s literature discussing physical characteristics, application and installation instructions for erosion control material.

Schedules

Equipment List; FIO

A list of proposed seeding equipment to be used in performance of seeding operation, including descriptive data and calibration tests.

Statements

Delivery; FIO.

Delivery schedule, at least 10 days prior to the intended date of the first delivery.

Maintenance Report; FIO

Written record of maintenance work performed.

Certificates

Certificates of compliance certifying that materials meet the requirements specified prior to the delivery of materials. Certified copies of the reports for the following materials shall be included:

a. Seed: For mixture, percent pure live seed, minimum percent germination and hard seed maximum percent weed seed content, maximum percent other crop and/or inert, date tested and state certification.

1.4 DELIVERY, INSPECTION, STORAGE, AND HANDLING

1.4.1 Inspection

Seed shall be inspected upon arrival at the job site by the Contracting Officer for conformity to type and quality in accordance with paragraph MATERIALS. Other materials shall be inspected for meeting specified requirements and unacceptable materials shall be removed from the job site.

1.4.2 Storage

Materials shall be stored in areas designated by the Contracting Officer. Seed shall be stored in cool, dry locations away from contaminants.

1.4.3 Handling

Except for bulk deliveries, materials shall not be dropped or dumped from vehicles.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Seed

2.1.1.1 Seed Classification

Washington State-certified seed of the latest season's crop shall be provided in original sealed packages bearing the producer's guaranteed analysis for percentages of mixture, purity, germination, hard seed, weed seed content, and inert material. Labels shall be in conformance with AMS-0l and Washington State Seed Standard WAC 16-316-370. Seed shall be regionally acclimated to Columbia Basin.

2.1.1.2 Seed Mixtures

Seed mixtures shall be proportioned by weight as follows:

SPECIES		POUNDS OF PURE LIVE SEED PER ACRE
Pseudorogriaria spicata	Bluebunch wheatgrass	4
Achnetherun hymenoides	Indian ricegrass	1-1/2
Poa secunda	Sandbergs bluegrass	2
Achillea millefolium	Western yarrow	1/4

Lupinus albicanlis	Sickle-keeled lupine	¼
Lieymus cinereus	Basin Wildrye	4

2.1.1.3 Quality

Seed shall conform to FS JJJ-S-181. Weed seed shall not exceed 1 percent by weight of the total mixture. 1% maximum other crop and/or inert. Wet moldy, or otherwise damaged seed shall be rejected.

2.1.1.4 Seed Mixing

The field mixing of seed shall be performed on site in the presence of the Contracting Officer.

2.1.2 Water

Water shall be the responsibility of the Contractor unless otherwise noted. Water shall not contain elements toxic to plant life.

PART 3 EXECUTION

3.1 SEEDING TIMES AND CONDITIONS

3.1.1 Seeding Time

Seed shall be sown from 1 October through 1 November for fall planting.

3.1.2 Seeding Conditions

Seeding operations shall be performed only during periods when beneficial results can be obtained. When drought, frozen ground, excessive moisture or other unsatisfactory conditions prevail, the work shall be stopped when directed. When special conditions warrant a variance to the Seeding operations, proposed times shall be submitted to and approved by the Contracting Officer.

3.2 SITE PREPARATION

Areas to receive seeding shall only include areas disturbed during construction of the Road 45C Upgrade.

3.2.1 Tillage

Soil on slopes gentler than 3-horizontal-to-1-vertical shall be tilled to a minimum depth of 4 inches. On slopes between 3-horizontal-to-1-vertical and 1-horizontal-to-1 vertical, the soil shall be tilled to a minimum depth of 2 inches by scarifying with heavy rakes, or other method. Rototillers shall be used where soil conditions and length of slope permit. On slopes 1 horizontal to 1 vertical and steeper, no tillage is required.

3.2.2 Finished Grading

3.2.2.1 Preparation

Areas compacted by construction operations shall be completely pulverized by tillage and returned to the original slope, grade and contour. Soil used for repair of erosion or grade deficiencies shall conform to requirements specified for satisfactory fill. Drainage patterns shall be maintained as indicated on

drawings. Finished grade shall be 1 inch below the adjoining grade of any surfaced area. Seeded areas shall be smooth graded and blended to existing areas.

3.3 SEEDING

3.3.1 General

Prior to seeding, any previously prepared seedbed areas compacted or damaged by interim rain, traffic or other cause, shall be reworked to restore the ground condition previously specified. Seeding operations shall not take place when the wind velocity will prevent uniform seed distribution.

3.3.2 Equipment Calibration

The equipment to be used and the methods of seeding shall be subject to the inspection and approval of the Contracting Officer prior to commencement of seeding operations. Immediately prior to the commencement of seeding operations, the Contractor shall conduct seeding equipment calibration tests in the presence of the Contracting Officer.

3.3.3 Applying Seed

The following seeding methods shall be utilized by the Contractor based on the size of the area to be seeded and the slopes/terrain of the areas to be seeded. Contractor shall apply all seed on pure live seed basis not total weight basis.

3.3.3.1 Drill Seeding

Drill seeding shall be performed in areas with slopes of 10% or less. Seed shall be uniformly drilled to an average depth of ½inch and at the pure live seed rates specified above using equipment having drills not more than 12 inches apart. A lightweight drag device (drag chains) shall be installed and functions to drag behind each disk row to adequately cover the seed.

3.3.3.2 Broadcast Seeding

Broadcast seeding shall be performed in areas where slopes exceed 10%. Seed shall be uniformly distributed at the rates specified above to any given site. Following application, sites less than 10% slope shall be harrowed lightly to incorporate be seed into the soil. On sites greater than 10% slope and all disturbed stream banks, a commercially available erosion control blanket shall be applied to the site. Application the erosion control blanket must be done so in such manner as to prevent the material from being removed from the site for the first 6 months by natural causes (i.e. wind and stormwater runoff events). As an alternative, the Contractor may substitute hydroseeding as a means of broadcast application.

3.4 ESTABLISHMENT PERIOD

3.4.2 Satisfactory Stand

A satisfactory stand from the seeding operation for a field area is defined as a minimum of 15 grass plants per square foot. The total bare spots shall not exceed 5 percent of the total seeded area.

3.5 FINAL ACCEPTANCE

3.5.1 Preliminary Inspection

Prior to the completion of the Establishment Period, a preliminary inspection shall be held by the Contracting Officer. Time for the inspection shall be established in writing. The acceptability of the turf in accordance with the Establishment Period shall be determined. An unacceptable stand shall be repaired as soon as seeding conditions permit.

3.5.2 Final Inspection

A final inspection shall be held by the Contracting Officer to determine that deficiencies noted in the preliminary inspection have been corrected. Time for the inspection shall be established in writing.

3.6 SEEDING AREA

Seeding is required in areas disturbed by construction or construction equipment; such as disturbed areas adjacent to all structures, access roads, staging area, and all disturbed stream banks.

END OF SECTION

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